HQMC
20 Aug 04

E R R A T U M

to MCO P3500.50

AVIATION TRAINING AND READINESS (T&R) MANUAL, CH-46E
(SHORT TITLE: T&R MANUAL CH-46E)

1. For administrative purposes, the Publications Control Number (PCN) has been reidentified. Change the PCN "10203356400" to read: "10203358000".

DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
2 NAVY ANNEX
WASHINGTON, DC 20380-1775

MCO P3500.50
C 473
22 Jul 02

MARINE CORPS ORDER P3500.50

From: Commandant of the Marine Corps
To: Distribution List

Subj: AVIATION TRAINING AND READINESS (T&R) MANUAL, CH-46E
(SHORT TITLE: T&R MANUAL, CH-46E)

Ref: (a) MCO P3500.14G

Encl: (1) LOCATOR SHEET

1. Purpose. To publish policies, procedures and standards regarding the training of CH-46E aircrew per reference (a).

2. Cancellation. T&R Manual, MCO P3500.16C, Volume 3, Chapters 2 and 3.

3. Background. Reference (a) restructures the T&R manual organization from nine volumes to 25 individual Marine Corps orders. This order prescribes a unique template to provide the aviation commander with standardized programs of instruction. As such, this order deviates from the Five Paragraph Order Format directed by MCO 5215.1H.

4. Recommendations. Recommended changes to this order are invited and will be submitted via the syllabus sponsor and the appropriate chain of command to: Commanding General, Training Command (C 473), Marine Corps Combat Development Command, 3300 Russell Road, Quantico, VA 22134-5001.

5. Reserve Applicability. This manual is applicable to the Marine Corps Reserve.

6. Certification. Reviewed and approved this date.

EDWARD HANLON, JR.
By direction

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RECORD OF CHANGES

Log completed change action as indicated.

Change Number	Date of Change	Date Entered	Signature of Person Incorporated Change

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CH-46E PILOT

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CHAPTER 1

CH-46E PILOT

100. MARINE MEDIUM HELICOPTER SQUADRON - CH-46E UNIT TEMPLATE

NOTE

The capabilities defined and described in the core capability and unit template sections are provided to ensure each like-squadron maintains a common base of training and depth of capabilities. When resources permit, and when in the judgment of the commander additional training would significantly increase the unit's war fighting capability, training to a level above these base capabilities is permitted. It is incumbent upon and expected of commanders to balance any increase in the depth of core capabilities against the long-term health and readiness of their unit while staying within resource constraints.

1. Table Of Organization

12 CH-46E
28 Pilots
19 Crew Chiefs
19 Aerial Gunner/Observers

2. Squadron Core Capability

a. A Core Capable squadron is able to sustain the following minimum performance on a daily basis during sustained contingency/combat operations, assuming at least 100% Primary Authorized Allowance (PAA), 90% in reporting status and 90% T/O on hand in all MOSs. If < 90%, core capability will be degraded by a like-percentage. The extent to which a Core Capable squadron is able to surge beyond its core capability is situational dependent.

b. Within a 24-hour period, a Core Capable squadron is able to sortie two divisions of three aircraft each (or a flight of six) of mission capable aircraft crewed by Night Systems Qualified (NSQ) aircrew on any mission essential task in a medium threat environment.

3. Basic Aircrew Qualifications. As a minimum, to be considered Core Competent, a squadron must possess the following numbers of aircrew who are 100% complete in each listed core skill (200 and 300 Level events). (Note: If a squadron is < T/O, required numbers are reduced by a like %.)

CORE SKILL	SQDN TOTAL PILOTS	SQUADRON TOTAL CC/(AO)
FAM	12	6
CAL	12	6
EXT	12	6(6)
FORM	12	6(6)
TERF	12	6(6)
NVG (HLL)	12	6(6)
NVG (LLL)	12	6(6)
CQ	12	6(6)
AG	12	6(6)
EW	12	6(6)
DM	12	6(6)
MAT	12	6
HIE	12	6(6)
TAC	12	6(6)
NBC	12	6(6)

4. Required Core Skills And Sorties. As a minimum, to be considered core skills complete, an individual must complete the sorties listed in the table below. Initial aircrew must fly all sorties. Refresher aircrew, previously core skill complete in a specific core skill, at a minimum must complete the "R" coded sorties.

	FAM	**CAL**	**EXT**	**FORM**	**TERF**	**NVG**	**AG**	**CQ**	**EW**	**DM**	**MAT**	**HIE**	**TAC**	**NBC**	**TOTAL**
Simulator	1	1	2	1	1	2	0	1	1	2	1	1	1	1	16
Initial	2	3	3	1	3	11	2	6	1	3	1	2	4	0	42
Refresher	0	2	1	1	1	6	0	0	0	3	1	1	2	1	19
Core Skill T&R Codes S = Simulator R = Refresher	S200 201 202	S210 R211 R212 213	S220 221 S390 391 R392	S230 R231	S240 241 242 R243	S250 R251 252 R253 254 255 256 R257 S310 R311 R312 313 R314	281 321	S290 291 292 293 300 301 491	S330 331	S340 R341 S440 R441 R442	S350 R351	S360 R361 362	S370 371 372 S373 R374 R375	SR380	
Simulator	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Initial	0	0	0	0	0	0	0	0	0	0	2	4	2	2	10
Refresher	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Core Plus T&R Codes											450 451	460 461 462 463	S400 401 402	430 431	

5. Flight Leader/Instructor Qualifications. As a minimum, for a squadron to be considered Core Competent, it must possess the following numbers of aircrew in the listed flight leadership/instructor categories. (Note: If the squadron is < T/O, required numbers are reduced by a like %).

DESIGNATION	SQDN PILOT	SQDN C/C(A/O)
HAC	12	N/A
SEC LDR	6	N/A
DIV LDR	4	N/A
FLT LDR	2	N/A
AMC	2	N/A
TERFI	6	4
DMI	2	2
NSI	4	4
WTI	2*	2**
AGI	N/A	2
*One shall be assigned as the squadron WTI ** One shall be assigned in Operations as the squadron enlisted WTI		

6. Events Required For Designation As Flight Ld/Ip

	HAC	SECLDR	DIVLDR	FL	AMC	TERFI	DMI	NSI	WTI
T&R Codes	604/605 w/in 24 Months of PUI	608	611	612	613	IAW MAWTS-1 Course Catalog	IAW MAWTS-1 Course Catalog	IAW MAWTS-1 Course Catalog	IAW MAWTS-1 Course Catalog

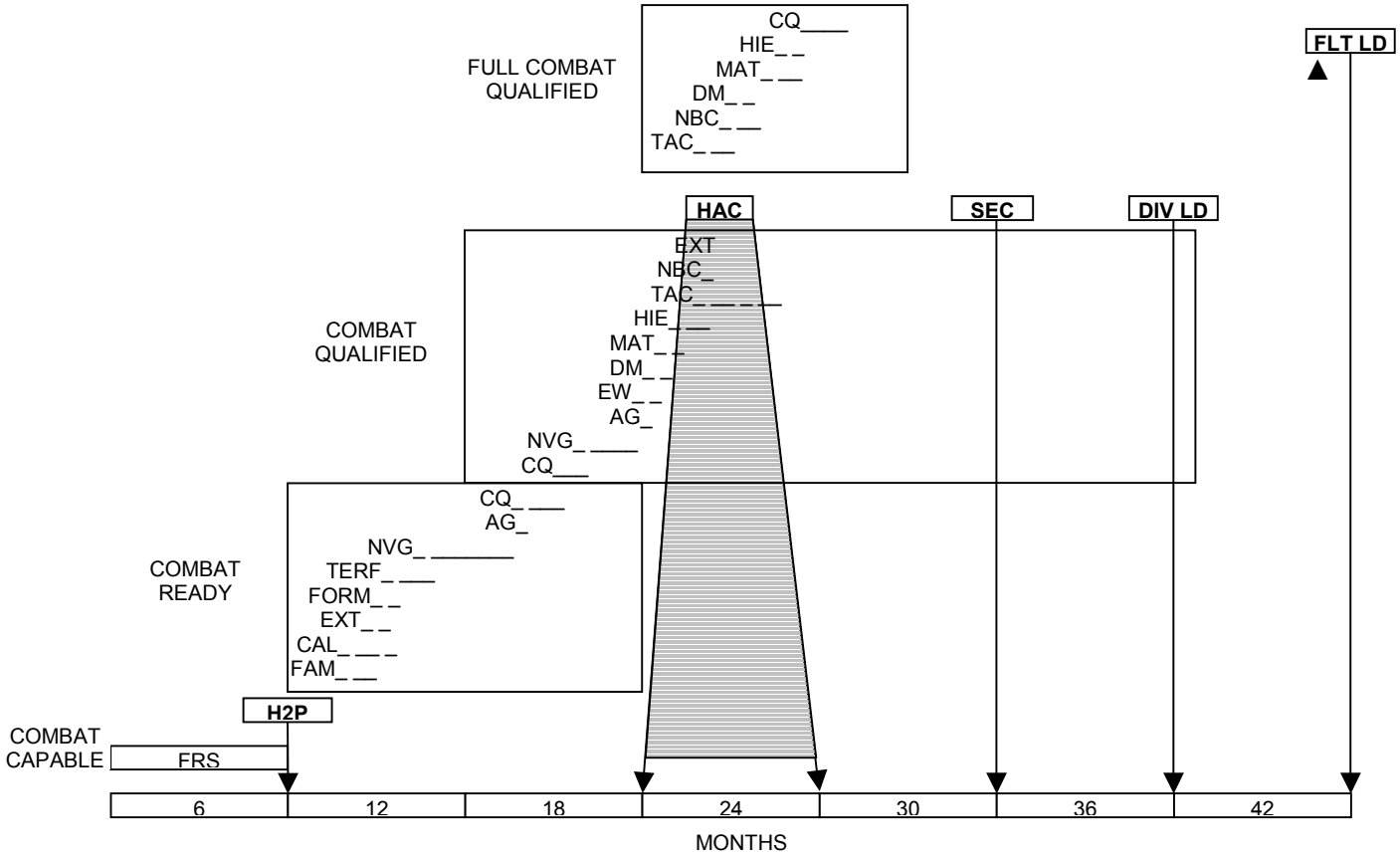
7. Events Required For Designation As Crew Chief Instructor. To be designated an enlisted instructor refer to the MAWTS-1 Course Catalog.

8. Initial Qualification Event And Re-qualification Requirements

	INITIAL EVENTS	INITIAL DOCUMENTATION PROCEDURE	REQUIREMENT IF DELINQUENT BUT **FRS NOT REQUIRED**	DOCUMENTATION IF DELINQUENT BUT **FRS NOT REQUIRED**
QUALIFICATIONS				
CQ	CQ 300 CQ 301 CQ 491	1. Letter from CO granting qualification in NATOPS Jacket. 2. Copy of letter in APR. 3. Logbook entry.	1. Qualification not effective only if delinquent in ALL initial qualification events. 2. Regain proficiency by flying delinquent events. 3. Stage proficiency may be regained by flying "R" syllabus. Senior "R" coded event in stage shall be flown. 4. Qualification is effective once proficiency is regained.	1. Qualifications are command specific. Therefore, if pilot has not had PCS or PCA orders since previous qualification letter, no additional qualification letter is required. 2. Follow-on commands shall repeat "initial documentation procedure."
TERFQ	TERF 241 TERF 242 TERF 243			
DMQ	DM 341 DM 441 DM 442			
NSQ(HLL)	NVG 251 to NVG 257			
NSQ	NVG 311 to NVG 314			
LEADERSHIP DESIGNATIONS				
HAC	FL-602/603/ 604/605	1. Letter from CO granting designation in NATOPS Jacket. 2. Copy of letter in APR. 3. Logbook entry.	1. Once granted within a command, leadership designations remain in effect until leaving that command or removed for cause.	1. Designations are command specific. Therefore, if pilot has not had PCS or PCA orders since previous designation letter, no additional designation letter is required. 2. Follow-on commands shall repeat "initial documentation procedure."
SEC LDR	FL-606/607/608			
DIV LDR	FL-609/610/611			
FLT LDR	FL-612			
AIR MSN CDR	FL-613			

INSTRUCTOR DESIGNATIONS				
TERFI	TERF 570/571/572	1. Letter from CO granting Instructor designation in NATOPS Jacket. 2. Copy of letter in APR. 3. Logbook entry.	1. Instructor recertification is not required unless attendance at FRS is required or instructor certification is removed for cause. 2. Instructor must be proficient in codes that are being instructed.	1. Additional paperwork is not required unless recertification is required. 2. Recertification shall follow “initial documentation procedure.”
DMI	DM 580/581/582			
NSFI	NVG 560/561/562/ 513			
NSSI				
NSI	NVG 590/591/592/ 593/594/595			

	REQUIREMENT IF **FRS REQUIRED**	DOCUMENTATION IF **FRS REQUIRED**
QUALIFICATIONS		
CQ	CQ 300 CQ 301	1. Letter from CO granting qualification in NATOPS Jacket. 2. Copy of letter in APR. 3. Logbook entry.
TERFQ	TERF 243	
DMQ	DM 341 DM 441 DM 442	
NSQ(HLL)	NVG 251 NVG 253 NVG 255 NVG 256 NVG 257	
NSQ	NVG 311 NVG 312 NVG 314	
LEADERSHIP DESIGNATIONS		
HAC	Completion of “R” syllabus	1. Letter from CO granting leadership designation in NATOPS Jacket. 2. Copy of letter in APR. 3. Logbook entry.
SEC LDR	Shall refly senior flight leadership level event comparable to previously held leadership designation.	
DIV LDR		
FLT LDR		
AIR MSN CDR		
INSTRUCTOR DESIGNATIONS		
TERFI, DMI, NSI	Recertification IAW MAWTS-1 Course Catalog.	1. Letter from CO granting Instructor designation in NATOPS Jacket. 2. Copy of letter in APR. 3. Logbook entry.



▲ - Air Mission Commander (AMC) follows FLT LD beyond 42 months.

Figure 1-1.--CH-46E Pilot Notional Training Progression Model.

101. PROGRAM OF INSTRUCTION (POI) FOR BASIC AND TRANSITION PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-20	CH-46E Familiarization/ISD/FREST/ Combat Capable Phase	FRS
21-29	Combat Ready Phase	Tactical Squadron
30-49	Combat Qualification Phase	Tactical Squadron
50-56	Full Combat Qualification Phase	Tactical Squadron

102. POI FOR CONVERSION PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-10	ISD/Combat Capable Phase	FRS
11	Combat Ready Phase	Tactical Squadron
12-13	Combat Qualification Phase	Tactical Squadron
14-18	Full Combat Qualification	Tactical Squadron

103. POI FOR REFRESHER PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-9	ISD/Combat Capable Phase	FRS
10-13	Combat Ready Phase	Tactical Squadron
14-17	Combat Qualification Phase	Tactical Squadron
18-20	Full Combat Qualification	Tactical Squadron

104. POI FOR MODIFIED REFRESHER PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-9	ISD/Combat Capable Phase	FRS

105. POI FOR INSTRUCTOR TRAINING

WEEKS	COURSE/PHASE	ACTIVITY
1-6	ISD/Flight Training	Tactical Squadron

110. GROUND/ACADEMIC TRAINING COURSES OF INSTRUCTION

COURSE	ACTIVITY
SERE	Joint Training School
Instrument School	FRS/Tactical Squadron
ISD	FRS
Terrain Flight	FRS/Tactical Squadron
Night Vision Goggles	FRS/Tactical Squadron

111. SQUADRON LEVEL TRAINING

MAWTS-1 Academic Support Package
Weapons and Tactics Instruction Course
Squadron SOP/NATOPS Manual
Instrument Procedures
Flight Safety/Cockpit Resource Management (CRM)
Operational Risk Management
Intelligence
Survival

Weapons Qualification
Mission Planning
NATTP 3-22.5-CH46E, CH-46E Tactical Manual, Volumes I and II
Academic Training Syllabus

120. FLIGHT TRAINING FOR BASIC AND TRANSITION PILOT

1. Combat Capable Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Basic Qualification	-	-.-	25.0
Familiarization	11/9	15.5/18.0	10.0/4.5
Instruments	4/3	6.0/6.0	4.0/3.0
Navigation	4/0	6.0/0.0	4.0/0.0
Confined Area Landings	2/1	3.0/2.0	1.5/0.5
Formation	2/1	3.0/2.0	2.0/0.5
External Loads	1/1	1.5/2.0	1.0/0.5
Terrain Flight	1/0	1.5/0.0	0.5/0.0
Review	1/1	1.5/2.0	1.0/1.0
Combat Capable Pilot Check	1/0	1.5/0.0	1.0/0.0
TOTAL FOR PHASE	**27/16**	**39.5/32.0**	**25.0/10.0**
COMBINED TOTALS	**43**	**71.5**	**35.0%**
ACCUMULATION FOR BASIC POI	**43**	**71.5**	**60.0%**

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Familiarization	2/1	3.0/2.0	0.6/0.3
Confined Area Landings	3/1	4.5/2.0	1.3/0.3
External Loads	1/1	1.5/2.0	0.5/0.3
Formation Flight	1/1	1.5/2.0	0.3/0.3
Terrain Flight	3/1	4.5/2.0	2.0/0.3
Night Vision Goggles	7/1	10.5/2.0	6.0/0.3
Air-to-Ground	1/0	1.5/0.0	0.5/0.0
Carrier Qualification	3/1	3.0/2.0	1.5/0.5
TOTAL FOR PHASE	**21/7**	**30.0/14.0**	**12.7/2.3**
COMBINED TOTALS	**28**	**44.0**	**15.0%**
ACCUMULATION FOR BASIC POI	**71**	**115.5**	**75.0%**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Carrier Qualification	2/0	2.0/0.0	1.7/0.0
Night Vision Goggles	4/1	6.0/2.0	4.7/0.5
Air to Ground	1/0	1.5/0.0	0.7/0.0
Electronic Warfare	1/1	1.5/2.0	0.5/0.5
Defensive Measures	1/1	1.5/2.0	1.0/0.5
Mountain Area Training	1/1	1.5/2.0	0.7/0.5
Helicopter Insert/Extract Techniques	2/1	2.0/2.0	1.2/0.3
Tactics	4/2	6.0/4.0	5.0/1.0
Nuclear, Biological, and Chemical	0/1	0.0/2.0	0.0/0.3
External Loads	2/1	3.0/2.0	0.8/0.1
TOTAL FOR PHASE	**18/9**	**25.0/18.0**	**16.3/3.7**
COMBINED TOTALS	**27**	**43.0**	**20.0%**
ACCUMULATION FOR BASIC POI	**98**	**158.5**	**95.0%**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Tactics	2/1	3.0/2.0	0.8/0.3
Nuclear, Biological, and Chemical	2/0	2.0/0.0	0.6/0.0
Defensive Measures	2/1	3.0/2.0	0.8/0.3
Mountain Area Training	2/0	3.0/0.0	0.6/0.0
Helicopter Insert/Extract Techniques	4/0	4.0/0.0	1.1/0.0
Carrier Qualification	1/0	1.0/0.0	0.5/0.0
TOTAL FOR PHASE	**13/2**	**16.0/4.0**	**4.4/0.6**
COMBINED TOTALS	**15**	**20.0**	**5.0%**
TOTALS FOR BASIC POI	**113**	**178.5**	**100.0%**

121. FLIGHT TRAINING FOR CONVERSION PILOT

1. Combat Capable Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	9/6	12.5/12.0
Instruments	3/3	4.5/6.0
Confined Area Landings	2/1	3.0/2.0
Formation	2/1	3.0/2.0
External Loads	1/1	1.5/2.0
Terrain Flight	1/0	1.5/0.0
Review	0/1	0.0/2.0
Combat Capable Pilot Check	1/0	1.5/0.0
TOTAL FOR PHASE	**19/13**	**27.5/26.0**
COMBINED TOTALS	**32**	**53.5**
ACCUMULATION FOR CONVERSION POI	**32**	**53.5**

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	0/1	0.0/2.0
Confined Area Landings	3/1	4.5/2.0
External Loads	1/1	1.5/2.0
Formation Flight	1/1	1.5/2.0
Terrain Flight	1/1	1.5/2.0
Night Vision Goggles	7/1	10.5/2.0
Air-to-Ground	1/0	1.5/0.0
Carrier Qualification	3/1	3.0/2.0
TOTAL FOR PHASE	**17/7**	**24.0/14.0**
COMBINED TOTALS	**24**	**38.0**
ACCUMULATION FOR CONVERSION POI	**56**	**91.5**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Carrier Qualification	2/0	2.0/0.0
Night Vision Goggles	3/1	4.5/2.0
Air to Ground	1/0	1.5/0.0
Electronic Warfare	1/1	1.5/2.0
Defensive Measures	1/1	1.5/2.0
Mountain Area Training	1/1	1.5/2.0
Helicopter Insert/Extract Techniques	2/1	2.0/2.0
Tactics	4/2	6.0/4.0
Nuclear, Biological, and Chemical	0/1	0.0/2.0
External Loads	2/1	3.0/2.0
TOTAL FOR PHASE	**17/9**	**23.5/18.0**
COMBINED TOTALS	**26**	**41.5**
ACCUMULATION FOR CONVERSION POI	**82**	**133.0**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Tactics	2/1	3.0/2.0
Nuclear, Biological, Chemical	2/0	2.0/0.0
Defensive Measures	2/1	3.0/2.0
Mountain Area Training	2/0	3.0/0.0
Helicopter Insert/Extract Techniques	4/0	4.0/0.0
Carrier Qualification	1/0	1.0/0.0
TOTAL FOR PHASE	**13/2**	**16.0/4.0**
COMBINED TOTALS	**15**	**20.0**
TOTALS FOR CONVERSION POI	**97**	**153.0**

122. FLIGHT TRAINING FOR REFRESHER PILOT

1. Combat Capable Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	5/3	8.0/6.0
Instruments	3/2	4.5/4.0
Confined Area Landings	1/0	1.5/0.0
Formation	1/0	1.5/0.0
External Loads	1/0	1.5/0.0
Terrain Flight	1/0	1.5/0.0
Review	0/1	0.0/2.0
Combat Capable Pilot Check	1/0	1.5/0.0
TOTAL FOR PHASE	**13/6**	**20.0/12.0**
COMBINED TOTALS	**19**	**32.0**
ACCUMULATION FOR REFRESHER POI	**19**	**32.0**

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Confined Area Landings	2/0	3.0/0.0
Formation Flight	1/0	1.5/0.0
Terrain Flight	1/0	2.0/0.0
Night Vision Goggles	3/0	4.5/0.0
TOTAL FOR PHASE	**7/0**	**11.0/0.0**
COMBINED TOTALS	**7**	**11.0**
ACCUMULATION FOR REFRESHER POI	**26**	**43.0**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Night Vision Goggles	3/0	4.5/0.0
Defensive Measures	1/0	1.5/0.0
Mountain Area Training	1/0	1.5/0.0
Helicopter Insert/Extract Techniques	1/0	1.0/0.0
Tactics	2/0	3.0/0.0
Nuclear, Biological, and Chemical	0/1	0.0/2.0
External Loads	1/0	1.5/0.0
TOTAL FOR PHASE	**9/1**	**13.0/2.0**
COMBINED TOTALS	**10**	**15.0**
ACCUMULATION FOR REFRESHER POI	**36**	**58.0**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Defensive Measures	2/0	3.0/0.0
TOTAL FOR PHASE	**2/0**	**3.0/0.0**
COMBINED TOTALS	**2**	**3.0**
TOTALS FOR REFRESHER POI	**38**	**61.0**

123. FLIGHT TRAINING FOR MODIFIED REFRESHER PILOT

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	4/3	4.5/6.0
Instrument	3/2	4.5/4.0
Combat Capable Evaluation	1/0	1.5/0.0
TOTAL FOR PHASE	**8/5**	**10.5/10.0**
COMBINED TOTALS	**13**	**20.5**
TOTALS FOR MODIFIED REFRESHER POI	**13**	**20.5**

124. INSTRUCTOR FLIGHT TRAINING

1. Instructor Under Training (IUT)

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	3/0	4.5/0.0
Instrument	2/0	3.0/0.0
Navigation	1/0	1.5/0.0
External Loads	1/0	1.5/0.0
Confined Area Landings	1/0	1.5/0.0
Formation	1/0	1.5/0.0
Instructor Under Training	1/0	3.0/0.0
Night Vision Goggles	1/0	1.5/0.0
TOTAL FOR PHASE	**11/0**	**18.0/0.0**
COMBINED TOTALS	**11**	**18.0**
TOTALS FOR IUT POI	**11**	**18.0**

125. REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS (RQD)

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Annual NATOPS Evaluation	1/0	1.5/0.0
Annual Instrument Evaluation	1/0	1.5/0.0
Aircraft Commander	2/0	3.0/0.0
Section Leader	1/0	1.5/0.0
Division Leader	1/0	1.5/0.0
Flight Leader Check	1/0	1.5/0.0
Mission Commander Check	1/0	1.5/0.0
TOTAL FOR PHASE	**8/0**	**12.0/0.0**
COMBINED TOTALS	**8**	**12.0**
TOTALS FOR RQD POI	**8**	**12.0**

126. SPECIAL TRAINING FLIGHTS

STAGE	FLIGHTS	HOURS
Arctic Weather Training	1	2.0
Desert Operations	1	2.0
CRM Training	1	2.0
Water Landings	1	1.0
Air Combat Maneuvering	1	2.0 (Simulator)
Functional Check Pilot Evaluation	1	1.5
SPECIAL TRAINING FLIGHTS TOTAL	**6**	**10.5**

130. FLIGHT/SIMULATOR PERFORMANCE REQUIREMENTS

1. General

a. Pilots shall fly events annotated with “N” at least 30 minutes after official sunset. Pilots may fly events annotated with “(N)” at night.

b. Pilots shall fly events annotated with “NS” with Night Vision Goggles (NVGs) for the entire flight. Events annotated with “(NS)” may be conducted at night utilizing NVGs.

c. Pilots should fly all simulator “(S)” training codes prior to the first flight in the aircraft in stage.

d. Pilots who do not fly Combat Capable training events shall fly them in the subsequent phase of training.

e. All flights annotated with an “E” shall be evaluated per T&R Manual, Administrative.

f. The Pilot Training Officer/WTI shall ensure all Aircrew Training Forms (ATFs) are entered in section 3 of the Aircrew Performance Record (APR) for all initial events flown. These ATFs shall remain until a more current ATF replaces it.

g. Transition, Conversion, and Refresher pilots shall have ATFs entered in section 3 of the APR for all flights designated by a “T”, “C”, or “R” in the flight description. These ATFs will replace ATFs previously entered in section 3.

h. Simulators. The Weapons Systems Trainer (WST)/Aircrew Procedures Trainer (APT) should be used in those flights designated “S” or “S/A” within the syllabus. Demonstration and exercise modes of the flight simulator shall be used within the training syllabus. If the flight simulator is not available, simulator periods designated as “S” may be waived. Crew Resource Management (CRM) shall be stressed in the training of all pilots.

i. Aircraft/Simulator Codes. These codes are assigned to delineate whether the event uses a simulator or an airframe. The codes are located in the event header following the POI codes. A = aircraft, S = simulator, A/S = aircraft preferred/simulator optional, S/A = simulator preferred/aircraft optional.

2. Instructional System Development (ISD) Program. All pilots shall complete assigned ISD lessons prior to completion of the applicable stage.

3. Minimum Altitudes. Pilots should fly all syllabus sorties at the lowest altitude possible commensurate with the sortie description and flight safety.

4. Evaluation Sorties

a. A designated NATOPS Instructor (NI)/Assistant NATOPS Instructor (ANI) shall evaluate RQD-600.

b. A designated instrument evaluator shall evaluate RQD-601.

c. Unless a specific instructor pilot requirement is assigned to the event, at a minimum a Helicopter Aircraft Commander (HAC) or appropriate Instructor Pilot (IP) acting as Pilot In Command (PIC), proficient in a given event should evaluate all initial events required for a basic Conversion, Transition, or Refresher Pilot Under Instruction (PUI), or any non-proficient (i.e. delinquent) pilot who has exceeded the refly factor. The evaluator shall complete an ATF for the event.

d. If the commanding officer has waived a syllabus event, the squadron Pilot Training Officer/WTI must place a waiver letter in section 3 of the APR.

5. Syllabus Assignment. Basic pilots should fly the entire syllabus. Transition, Conversion, and Refresher pilots should fly those flights designated by a “T,” “C,” or “R” in the flight description. The FRS will prescribe any partial Conversion or partial Refresher POI for the Combat Capable syllabus.

6. Refresher Syllabus. Per T&R Manual, Administrative the Refresher syllabus is for those pilots of dual control aircraft who require Refresher training at the FRS. This syllabus is predicated on the previously demonstrated experience and syllabus completion of the Refresher PUI. This Manual establishes a truncated syllabus tailored to the Refresher PUI as indicated by those events designated by an "R". A pilot in the Refresher syllabus shall fly all "R" coded events.

a. Designations for Refreshers. At the discretion of the commanding officer, Refresher pilots may regain their previous designations (HAC, Sec Ld, Div Ld, Flt Ld, AMC) by reflying the senior flight leadership event comparable to each previously held leadership designation.

b. Qualifications for Refreshers. Refreshers must requalify in the appropriate stages of flight (TerfQ, DMQ, NSQ [HLL], NSQ [LLL]). Stage proficiency may be regained by flying the "R" syllabus. The senior "R" coded event in stage shall be flown. Qualification is effective once proficiency is regained.

c. Recertification for Refreshers. Refreshers are recertified by the squadron or MAWTS-1 (as appropriate) as instructors (TERFI, DMI, NSFI, NSI, NSSI) IAW MAWTS-1 course catalog.

(1) Those pilots of dual control aircraft who are out-of-type for less than 485 days and do not require Refresher or Modified Refresher training are simply non-proficient (delinquent) due to the fact that they have exceeded the refly factor for any given event. They shall fly all "R" coded events.

(a) Designations if delinquent but FRS not required. At the discretion of the commanding officer, pilots may regain their previous designations (HAC, Sec Ld, Div Ld, Flt Ld, AMC) by reflying the senior flight leadership event comparable to each previously held leadership designation.

(b) Qualifications if delinquent and FRS not required. The commanding officer may grant qualification once proficiency in all qualification events is regained.

(c) Recertification not required if FRS not required. The commanding officer may grant recertification upon regaining proficiency in stage.

(2) All the Refresher syllabi issues above apply only up to the stage achieved during the prior tour. Subsequently the pilot will complete the entire remaining basic syllabus. When the "R" coded events within a stage of training are complete, the pilot may be credited with the CRP for the entire stage of training. This assumes that the Refresher has had previously completed that stage of training. If the Refresher pilot has not previously completed that stage or particular event, then the Refresher shall fly the entire stage or all events not previously flown.

7. Refly Interval. Figure 1-2 shows refly interval and CRP for the 7562 MOS.

8. Aircrew Evaluation Flights. All pilots shall have the appropriate evaluation form filled out upon completion of the following:

a. Annual NATOPS Check (RQD-600).

b. Annual Instrument Check (RQD-601).

c. Any flight in the Combat Ready, Combat Qualification, or Full Combat Qualification phase as recommended by the Squadron Standardization Board.

9. Crew Resource Management (CRM). Aircrews shall brief techniques of CRM for all flights and/or events.

131. COMBAT CAPABLE PHASE

1. Familiarization (FAM)

a. Purpose. To develop preliminary flight skills in the CH-46E and become familiar with aircraft flight characteristics, limitations, emergency procedures, and to develop proficiency in all maneuvers contained in the familiarization stage.

b. General

(1) All pilots receiving instruction under this syllabus shall be familiar with all emergencies covered on each previous flight.

(2) In preparing for a sortie, pilots shall study emergencies as prescribed in the NATOPS Flight Manual. The pilot's pocket checklist lacks important information presented in the NATOPS Flight Manual. In addition to the emergency procedures, a basic knowledge of aircraft systems related to each particular malfunction shall be studied.

(3) Pilots will find maneuver descriptions in the NATOPS Flight Manual and explanations in the current FRS Standardization Manual.

(4) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

c. Crew Requirements

(1) Simulator Training - Two RACs/qualified instructor.

(2) Flight Training - IP/RAC/CC.

d. Ground/Academic Training

(1) All pilots shall complete the assigned ISD lessons.

(2) All pilots shall complete NATOPS open book examination prior to FAM-109.

(3) Prior to completing SFAM-118, the RAC shall:

(a) Complete “Introduction to Night Systems Training and Night Systems” contained in the MAWTS-1 Academic Support Package.

(b) Complete the NITE Lab Course “Night Vision Goggle Training Program.”

(c) Be familiar with the appropriate chapters of the NWP 3-22.5-CH-46E (CH-46E TACMAN), the MAWTS-1 Helicopter NVD Manual, and the computer generated light level planning calendar.

(4) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

e. Simulator Event and Flight Training. (9 Events, 18.0 Hours/11 Flights, 15.5 Hours).

SFAM-100 2.0 C,R,M S

Goal. Introduce cockpit preflight inspection, checklists, and engine start procedures.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Functions the Weapons System Trainer (WST) can simulate and those that are not possible.

(b) Engines and related systems.

1 Beep trim switches.

2 Primary/secondary indications.

(c) Start/shutdown limitations.

(d) Operation of cockpit controls/equipment.

(2) Introduce/Evaluate

(a) Interior inspection/pre-start checklist.

(b) Normal engine start.

(c) Single engine start/engagement.

(d) Pre-taxi checklist.

(e) Radios and communication.

1 Voice communication.

2 ICS operation.

3 UHF & VHF operation.

(f) Normal shutdown.

Performance Standards

Pilot shall demonstrate knowledge of engine systems, NATOPS Checklists, and communication systems.

Prerequisite. Appropriate FRS ISD Lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

SFAM-101 2.0 C S

Goal. Introduce pattern work and ground emergencies.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) APU.

(2) Introduce/Evaluate

(a) Ground taxi.

(b) Takeoff checklist.

(c) Vertical takeoff.

(d) Hover patterns.

(e) Transition to forward flight.

(f) Normal Pattern.

(g) Landing checklist.

(h) Normal approach to a hover.

(i) Vertical landing.

(3) Review

(a) Engine start/shutdown.

(b) Rotor engagement.

(c) Communication procedures.

(4) Emergencies

(a) Engine start malfunctions.

1 Hot start/cold hang-up.

2 Circuit breaker malfunctions.

3 Starter hang-up.

(b) APP/APU malfunctions.

1 Circuit breaker malfunctions.

2 Battery malfunction.

3 APU fire.

Performance Standards

Pilot shall demonstrate knowledge of APU and start emergencies, conduct engine start and shutdown IAW NATOPS pocket checklist and basic FAM maneuvers IAW FRS Standardization Manual.

Prerequisite. SFAM-100, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

SFAM-102 2.0 C S

Goal. Introduce engine related problems in the transition stage and practice basic FAM maneuvers.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Rotor Brake.

(2) Introduce/Evaluate

(a) Communications procedures.

(b) Normal approach to a hover.

(c) Normal approach to a no-hover.

(d) Max Gross Wt (minimum power) takeoffs and landings.

(3) Review. All previously introduced malfunctions and procedures.

(4) Emergencies

(a) Engine condition actuator malfunctions.

1 ECA failure rotor brake on.

2 ECA failure on shutdown (FREEZE/MAX/MIN).

(b) Single engine emergencies.

1 HIGE.

2 HOGE.

3 Takeoff.

(c) Engine compartment fire (on deck).

(d) Transformer rectifier failure.

(e) Cross-tie failure (APU running).

(f) Utility hot light.

(g) Rotor brake slippage.

Performance Standards

Pilot shall demonstrate knowledge of the rotor brake system, ECA failures and operation of the aircraft under high gross weights (minimum power).

Prerequisite. SFAM-101, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

SFAM-103 2.0 S

Goal. Introduce running takeoffs and landings and AFCS off flight.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) AFCS.

(2) Introduce/Evaluate

(a) Running takeoff.

(b) Running landing.

(c) AFCS off flight.

(d) Single engine Landings/waveoffs.

(3) Review. Start and shutdown checklist and all previously introduced maneuvers.

(4) Emergencies

(a) ECA failures in flight.

1 Maximum.

2 Minimum.

3 Intermittent.

(b) Generator failure.

(c) LCT failures.

Performance Standards

Pilot shall demonstrate knowledge of the automatic flight control system, single engine operation, and running takeoffs and landings.

Prerequisite. SFAM-102, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

SFAM-104 2.0 C,R,M S

Goal. Review previous pattern work and introduce steep approaches and autorotations.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Engine oil system.

(2) Introduce/Evaluate

(a) Steep approaches.

1 Hover landing.

2 No hover landing.

(b) Straight in 80 kt autorotation.

(3) Review. AFCS off flight and all previously introduced maneuvers and emergencies.

(4) Emergencies

(a) Single engine emergencies.

1 Lube pump drive shaft failure.

2 Sprag clutch slippage.

3 Compressor stall.

(b) DC bus failure.

Performance Standards

Pilot shall demonstrate knowledge of the engine oil system, single engine operation, steep approaches and autorotations.

Prerequisite. SFAM-103, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

SFAM-105 2.0 S

Goal. Introduce 90-degree power recovery autorotation, emergency throttle operations and review previous maneuvers.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Emergency throttle system.

(2) Introduce/Evaluate

(a) Obstacle takeoff.

(b) Emergency throttle operations.

(c) 90-degree autorotation.

(3) Review. All previously introduced procedures.

(4) Emergencies

(a) Single engine emergencies.

1 Power turbine speed signal interruption (Flex shaft failure).

2 Engine compartment fire.

(b) Essential bus failures.

(c) Control boost malfunctions.

(d) Rotor brake failure in-flight.

Performance Standards

Pilot shall demonstrate knowledge of the emergency throttle system, obstacle takeoff and 90-degree autorotation.

Prerequisite. SFAM-104, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

SFAM-106 2.0 S

Goal. Review/evaluate all previously introduced maneuvers and emergencies.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Electrical system.

(2) Introduce/Demonstrate

(a) AFCS off during portions of flight.

(b) Autorotation.

(c) Emergency throttle operations.

(3) Review. All previously introduced maneuvers and emergencies.

(4) Emergencies

(a) Fuel contamination.

(b) Fuel boost malfunctions.

(c) Engine driven fuel pump failure.

(d) Electrical fire/smoke.

(e) Single and dual AFCS malfunctions.

(f) Transmission malfunctions.

1 Gauge malfunctions.

2 Imminent failure.

Performance Standards

Pilot shall demonstrate knowledge of the electrical systems and all previously introduced maneuvers and emergencies.

Prerequisites. SFAM-105, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

SFAM-107 2.0 C,R,M S

Goal. Review all FAM stage maneuvers.

Requirement. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(1) Evaluate. Previously introduced maneuvers and emergencies.

(2) Emergencies. AC essential bus failure and DC bus failure.

Prerequisite. SFAM-106, appropriate FRS ISD program lessons.

Performance Standards

Pilot shall demonstrate knowledge of start, shutdown and in-flight emergencies and demonstrate proficiency in checklists and cockpit layout.

Ordnance. None.

External Syllabus Support. WST/APT.

FAM-108 0.0 C,R,M 1 STATIC ACFT A

Goal. Introduce normal ground and preflight procedures.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, FRS Preflight Manual)

(a) Systems

1 APU/Ground Power.

2 CNCS.

(b) Emergencies

1 APU compartment fire.

2 All emergency procedures covered in simulator stage.

(2) Introduce/Evaluate

(a) Mission Brief to include ODO and NATOPS Brief. Load Computation and CG Limitations.

(b) Aircraft Discrepancy Book to determine aircraft status: up/down discrepancies, discrepancies that modify the mission plan, and aircraft properly serviced for mission.

(c) Preflight routine to include gear checkout/preflight, flight line safety and tour of squadron maintenance spaces.

(d) Preflight.

(e) Postflight.

(f) Visual communication with hand signals ashore (start/engage/shutdown).

(g) Hot seat procedures.

(h) Emergency egress.

(i) CNCS Fam on APU/ground power.

(j) NATOPS Checklists (prestart/starting engines/engaging rotors/pretaxi/pretakeoff/takeoff/prelanding/postlanding/shutdown).

Performance Standards

Pilot shall demonstrate knowledge of aircraft systems and nomenclature and squadron procedures for flight line safety.

Prerequisite. Appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. Ground power source.

FAM-109 1.5 C 1 CH-46E A

Goal. Introduce start, normal ground and flight procedures including low work and normal approaches. Review SFAM-101.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Systems

1 Engine condition system.

2 Engine oil system.

(b) Emergencies

1 Hot start/engine fire.

2 Engine compartment fire.

3 Rotor brake slippage during engine start.

4 ECA failure with rotor brake on.

5 ECA failure on shutdown.

6 Cold hang-up.

(2) Demonstrate/Introduce

(a) Normal cockpit procedures.

(b) Starting procedures.

(c) Communication procedures.

(d) Pretaxi procedures.

(e) Ground taxiing.

(f) Elevated nose wheel taxi/rearward taxi (demo).

(g) Vertical takeoff.

(h) Transition to forward flight (demo).

(i) Normal approach (demo).

(j) Max gross takeoff and landing (demo).

(k) Hover patterns.

(l) Operation of engine beep trim switches.

(m) Shutdown procedures.

(n) Aircraft trim/CDRB usage.

(o) Home field course rules.

Performance Standards

Pilot shall demonstrate knowledge of aircraft systems and introduce basic FAM maneuvers.

Prerequisite. FAM-108.

Ordnance. None.

External Syllabus Support. None.

FAM-110 1.5 C 1 CH-46E A

Goal. Introduce landing pattern options. Practice start, normal ground and previously introduced flight procedures. Review SFAM-102.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Systems

1 Power Management System.

2 Flight Control System to include AFCS.

(b) Emergencies

1 Single engine failure while HIGE.

2 Single engine failure on takeoff.

3 Lost communications per local course rules.

4 All previously introduced emergencies.

(2) Demonstrate/Introduce

(a) No hover landing (demo).

(b) Simulated single engine/runway landing (demo).

(c) Steep approach (demo).

(d) Running takeoff/landing (demo).

(e) Ramp and hatch usage (demo).

(f) Torque horn (demo).

(3) Review/Evaluate

(a) Normal cockpit procedures.

(b) Starting procedures.

(c) Communication procedures.

(d) Pretaxi procedures.

(e) Ground taxiing.

(f) Elevated nose wheel taxi/rearward taxi.

(g) Vertical takeoff.

(h) Transition to forward flight.

(i) Normal approach.

(j) Max gross takeoff and landing.

(k) Hover patterns.

(l) Operation of engine beep trim switches.

(m) Shutdown procedures.

(n) Aircraft trim/CDRB usage.

(o) Home field course rules.

Performance Standards

Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-109 and appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-111 1.5 C 1 CH-46E A

Goal. Review previous FAM maneuvers. Practice normal cockpit procedures. Review hover/low work, ground taxi, and normal approaches.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Systems

1 Electrical Systems to include AC, DC, and generators.

(b) Emergencies

1 Single engine failure in-flight.

2 Dual engine failure in-flight.

3 Engine restart in-flight.

4 Single AFCS failure.

5 Dual AFCS failure.

6 Fuel jettison.

(2) Demonstrate/Introduce

(a) PMS-off flight (demo).

(b) Single engine failure on takeoff and HIGE (demo).

(c) Straight-in autorotation (demo).

(d) AFCS off flight (demo).

(e) Steep approach.

(f) Single engine flight/approach/wave-off.

(g) No-hover landing.

(h) Running takeoff/landing.

(i) Local course rules.

(3) Review/Evaluate

(a) Ground taxiing.

(b) Vertical takeoff.

(c) Transition to forward flight.

(d) Normal approach.

(e) Max gross takeoff and landing.

(f) Communications procedures.

(g) Previously introduced maneuvers as necessary.

Performance Standards

Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-110 and appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-112 1.5 1 CH-46E A

Goal. Introduce AFCS off flight and minimum power pattern work. Review SFAM-103.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Systems

1 Transmissions and Drive System to include Sprag Clutch.

2 Emergency Throttle System.

3 Rotor Brake System.

(b) Emergencies

1 Fuselage fire in-flight.

2 Smoke and fume elimination.

3 Engine fire in-flight.

4 Generator failure.

5 Electrical fire.

(2) Demonstrate/Introduce

(a) Ninety-degree power recovery autorotation (demo).

(b) Single engine to a spot (demo).

(c) Straight-in autorotation.

(d) AFCS off flight.

(e) Single engine failure on takeoff/HIGE.

(f) PMS-off flight.

(3) Review/Evaluate

(a) Running takeoff and landing.

(b) Single engine flight/approach/waveoff.

(c) No hover landing.

(d) Local course rules.

(e) Previously introduced maneuvers as necessary.

Performance Standards

Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisites. FAM-111 and appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-113 1.5 C,R,M 1 CH-46E A

Goal. Review previous pattern work and introduce Emergency Throttle operations. Review maneuvers from SFAM-104.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E FRS Standardization Manual)

(a) Systems

1 Engine Fuel Control.

2 Engine Fuel System.

(b) Emergencies

1 Nf flex shaft failure.

2 Rotor brake failure in-flight.

3 Sprag clutch seizure.

4 Sprag clutch slippage.

5 Compressor stall.

6 Single engine failure HOGE.

7 Dual engine failure HOGE.

(2) Demonstrate/Introduce

(a) Practice ETS operation/approaches (demo).

(b) Single engine failure HOGE (demo).

(c) Max-glide power recovery autorotation (demo).

(d) Simulated ECA failure in-flight (demo).

(e) Ninety degree power recovery autorotation.

(f) Simulated single engine to a spot.

(3) Review/Evaluate

(a) Straight-in power recovery autorotation.

(b) Max gross weight/min power takeoff and landings.

(c) AFCS off flight/approaches.

(d) Simulated single engine approach/landings.

(e) Simulated single engine failure on takeoff.

(f) Simulated single engine failure HIGE.

(g) Previously introduced maneuvers as necessary.

Performance Standards

Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-112 and appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-114 1.5 C 1 CH-46E A

Goal. Introduce ETS techniques and review as required.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Systems

1 Utility Hydraulic System.

2 Hydraulic Boost System.

(b) Emergencies

1 ECA failure.

2 Imminent transmission failure.

3 Fuel boost pump failure.

4 Engine driven fuel pump failure.

5 Fuel quantity indicator failure.

6 LCT actuator failures.

7 Other emergencies as required.

(2) Demonstrate/Introduce

(a) FAM maneuvers in various cyclic trim modes (demo).

(b) Practice ETS operations in-flight (demo).

(c) ETS operations.

(d) ETS approach/landings.

(e) Maximum glide power recovery autorotation.

(3) Review/Evaluate

(a) Ninety degree power recovery autorotation.

(b) Single engine to a spot.

(c) Max gross weight/min power takeoff and landings.

(d) AFCS off flight/approaches.

(e) Steep approach.

Performance Standards

Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-113 and appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-115 1.5 1 CH-46E A

Goal. Review/evaluate all previously introduced maneuvers and emergencies.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Systems

1 Integrated Cargo Handling Systems.

2 Review all system limitations.

(b) Emergencies

1 Hydraulic flight control boost failures.

2 Utility hydraulic system/subsystem failure.

3 Utility hydraulic system overheating.

4 All previously introduced emergencies as required.

(c) Miscellaneous

1 Ditching.

2 Single engine takeoff from water/water taxi.

3 Inadvertent HEFS inflation.

4 Cargo jettison.

(2) Review/Evaluate

(a) All previously introduced FAM maneuvers.

(b) Max glide power recovery autorotation.

(c) ETS operations.

Performance Standards

Pilot shall demonstrate knowledge of aircraft systems, introduce and review basic FAM maneuvers.

Prerequisite. FAM-114 and appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-116 1.5 C,R,M 1 CH-46E A

Goal. FAM stage progress check.

Requirement

(1) Evaluate. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) All FAM stage maneuvers.

(2) Review. All previously introduced emergencies.

Performance Standards

Pilot shall demonstrate knowledge of aircraft systems and basic FAM maneuvers as well as the capability to preflight the aircraft.

Prerequisite. FAM-115 and appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-117 1.5 C,R,M 1 CH-46E A N

Goal. Introduce night operations.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Aircraft lighting and use.

(b) Radar altimeter use.

(c) CRM.

(d) Night scan.

(e) Prelaunch communications with light signals.

(f) Emergency procedures at night.

(2) Introduce/Evaluate

(a) Takeoff to a hover.

(b) Transition to forward flight.

(c) Normal approach.

(d) Vertical landing from a hover.

(e) Running landing.

(f) Steep approach.

(g) Power recovery autorotations.

(h) AFCS off flight/approach/landing.

(i) Simulated single engine approach/landing.

(j) ETS approach/landing.

Performance Standards

Pilot shall demonstrate the ability to operate the aircraft and systems during night operations.

Prerequisite. FAM-116 and appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

SFAM-118 2.0 C S NS

Goal. Introduce NVG procedures.

Requirement

(1) Introduce/Evaluate

(a) Goggle/Degoggle.

(b) NVG eyelane/goggle preflight.

(c) Aircraft lighting procedures.

(d) Scan techniques.

(e) Vertical takeoffs/landings.

(f) Hover patterns.

(g) Normal approaches.

(2) Emergencies. Any previously introduced emergency as appropriate.

Performance Standards

Pilot shall practice NVG procedures and scan technique to prepare for aircraft events.

Prerequisite. FAM-117, NVG Lab, Night Systems class and appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. WST/APT, Night Vision Goggles.

FAM-119 2.0 C,R 1 CH-46E A N NS

Goal. Introduce NVG flight.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, MAWTS-1 NVD Manual)

(a) CRM.

(b) Crew comfort levels.

(c) NVG failures.

(d) Depth perception.

(e) Aircraft lighting.

(f) Emergency procedures.

(g) MAWTS-1 NVD Manual.

(h) ANVIS 6 or 9 NVD, and NVG HUD (HMD).

(2) Introduce

(a) Use of NVGs at an unlighted outlying field under ambient light levels greater than .0022 LUX as depicted by the computer generated Light Level Planning Calendar.

(b) Use and wear of NVGs while performing taxi, basic air work, low work, and touch-and-go pattern work.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall practice basic FAM maneuvers safely while wearing NVGs.

Prerequisite. SFAM-118, NVG Lab, Night Systems class, appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. NVGs, unlit airfield.

2. Instruments (INST)

a. Purpose. To develop proficiency in instrument flight procedures under instrument conditions using all navigation aids.

b. General

(1) Pilots will conduct all instrument flights day or night under actual instrument conditions or hooded in the case of simulated instrument flight. Instructor pilots shall discuss aircraft lighting prior to RAC's first night flight.

(2) All flights will terminate with an instrument approach when practical.

(3) Pilot shall complete IGS prior to INST-126 if the pilot does not possess a current instrument rating.

(4) Pilots will find maneuver descriptions in the NATOPS Instrument Flight Manual and explanations in the current FRS Standardization Manual.

(5) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

(6) Prerequisite. Appropriate FRS ISD program lessons.

c. Crew Requirement

(1) Simulator Training - Two pilots/Qualified Instructor.

(2) Flight Training - IP/RAC/CC.

d. Ground Training. All basic pilots shall complete the appropriate ISD lessons. Transition, Conversion, and Refresher pilots shall complete their designated lessons.

e. Simulator Event and Flight Training. (3 Events, 6.0 Hours/4 Flights, 6.0 Hours).

SINST-120 2.0 C,R,M S

Goal. Introduce radio, TACAN, ADF, and radar altimeter procedures.

Requirement

(1) Review

(a) Instrument checklist.

(b) ITO.

(c) Altitude hold procedures.

(d) Level speed change.

(e) Timed turns.

(f) S-1 patterns.

(g) Full/partial panel unusual attitude recoveries.

(h) Partial panel.

(i) Oscar pattern.

(j) Instrument autorotation.

(2) Introduce/Evaluate

(a) TACAN procedures.

(b) LF/UHF ADF procedures.

(c) GCA procedures.

(d) In-flight emergencies.

Performance Standards

Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN approach within the parameters set forth in the Instrument Manual.

Prerequisite. Appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT/operable TACAN/ADF.

SINST-121 2.0 C,R,M S (N)

Goal. Practice basic instrument flight and coordination maneuvers.

Requirement

(1) Discuss

(a) Maneuver limitations.

(b) Compass system control panel.

(c) Instrument scan.

(2) Introduce/Evaluate

(a) Instrument checklist.

(b) Level speed change.

(c) Timed turns (standard and one-half standard rate).

(d) Climbs and descents.

(e) Unusual attitudes.

(f) Partial panel at cruise altitude.

(g) Oscar pattern.

(h) Vertical S-1 pattern.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN approach within the parameters set forth in the Instrument manual.

Prerequisite. SINST-120, appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. WST/APT/operable TACAN/ADF.

SINST-122 2.0 C S N

Goal. Introduce radio instrument orientation.

Requirement

(1) Introduce/Evaluate

(a) ADF time/distance checks.

(b) ADF holding.

(c) ADF approach.

(d) ADF missed approach.

(e) UHF direction finding.

(f) Instrument departure.

(2) Review/Evaluate

(a) Basic airwork.

(b) Basic instrument work.

(c) Instrument takeoff.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN approach within the parameters set forth in the Instrument manual and demonstrate instrument orientation.

Prerequisite. SINST-121, appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. WST/APT/operable TACAN/ADF.

INST-123 1.5 C,R,M 1 CH-46E/WST A/S (N)

Goal. Practice TACAN/GCA procedures.

Requirement

(1) Introduce/Evaluate

(a) TACAN point-to-point navigation.

(b) TACAN tracking, radial changes.

(c) TACAN holding.

(d) TACAN arcing.

(e) TACAN approach.

(f) TACAN missed approach.

(g) GCA (PAR, ASR) procedures.

(h) TACAN departure.

(2) Review/Evaluate

(a) Instrument takeoff.

(b) UHF/ADF orientation.

(3) Emergencies. As required.

Performance Standards

Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN/GCA approach to an approved military field within the parameters set forth in the Instrument manual.

Prerequisite. SINST-122, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. Operable TACAN, GCA approach.

INST-124 1.5 C,R,M 1 CH-46E/WST A/S (N)

Goal. Introduce enroute procedures.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Fuel management.

(b) Internal fuel tank procedures.

(2) Introduce/Evaluate

(a) GCA (ASR).

(b) Cross-Country Procedures.

1 Flight logs.

2 File flight plan.

3 Departure/airways/arrival procedures.

4 Close out flight plan.

(3) Review/Evaluate

(a) TACAN procedures.

(b) GCA (PAR).

(c) Basic instruments.

(4) Emergencies. Perform as required.

Performance Standards

Pilot shall perform all basic instrument maneuvers IAW FRS Standardization Manual as well as conduct a TACAN/GCA approach to an approved military field within the parameters set forth in the Instrument manual.

Prerequisite. INST-123, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. Operable TACAN, GCA Approach.

INST-125 1.5 1 CH-46E/WST A/S (N)

Goal. Review INST-123. Emphasize approaches.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual)

(a) Flight filing when airborne.

(b) Pilot responsibilities at other fields.

(2) Review/Evaluate

(a) Flight logs.

(b) Filing DD-175.

(c) Departure/airways/approach procedures.

(d) Voice procedures.

(e) Instrument approaches.

(f) Missed approaches.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform all basic instrument maneuvers IAW the FRS Standardization Manual as well as conduct a TACAN/GCA approach to an approved military field within the parameters set forth in the Instrument manual. Emphasis placed on DD-175 and filing procedures.

Prerequisite. INST-124, appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. Operable TACAN, GCA approach.

INST-126 1.5 C,R,M 1 CH-46E/WST A/S (N)

Goal. RAC/Refresher Instrument check.

Requirement

(1) Review/Evaluate. All previously introduced instrument maneuvers and procedures.

(2) Emergencies. Perform as required.

Performance Standards

Pilot shall demonstrate the ability to perform instrument maneuvers safely IAW Instrument Flight Manual.

Prerequisites. INST-125, appropriate instrument minimums per OPNAVINST 3710.7.

Ordnance. None.

External Syllabus Support. Operable TACAN, GCA approach.

3. Navigation (NAV)

a. Purpose. To develop navigation skills using charts and maps.

b. General. Conversion aircrews qualified and current in navigation in previous type aircraft are exempt.

(1) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

c. Crew Requirement. IP/RAC/CC.

d. Flight Training. (4 Flights, 6.0 Hours).

NAV-130 1.5 1 CH-46E A

Goal. Introduce day visual navigation.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual)

(a) CRM.

(b) Lost plane procedures.

(c) Time/distance checks.

(d) Distance estimation and map legend information.

(e) Map Preparation.

(f) METT-TSL considerations on route selection.

(2) Introduce

(a) Navigation procedures emphasizing use of terrain, contour features, and triangulation to determine position.

(b) Use of 1:250,000 maps.

(c) Point-to-point navigation to at least five checkpoints at 200 to 500 feet AGL. Remain within 500 meters of course line.

Performance Standards

Pilot shall perform a navigation route utilizing a 1:250,000 map remaining within 500 meters of course throughout the route that consists of a minimum of five checkpoints.

Prerequisite. FAM-113, FRS Navigation class.

Ordnance. None.

External Syllabus Support. None.

NAV-131 1.5 1 CH-46E A

Goal. Review NAV-130.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual)

(a) Comfort level.

(b) Navigation techniques.

(c) Map preparation.

(d) Boundaries.

(e) Wind correction for DR navigation.

(f) In-flight route changes.

(g) Onboard navigation systems.

(h) Basic Survivability Concepts.

(2) Plan and navigate at 200-300 feet AGL to a minimum of six predetermined terrain features using 1:50,000 maps. Remain within 200 meters of course line. Use appropriate onboard navigation systems, if available.

Performance Standards

Pilot shall perform a navigation route utilizing a 1:50,000 map remaining within 200 meters of course for a minimum of six checkpoints.

Prerequisite. NAV-130.

Ordnance. None.

External Syllabus Support. None.

NAV-132 1.5 1 CH-46E) A N

Goal. Introduce visual navigation at night.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual)

(a) CRM.

(b) Special characteristics of night NAV.

(c) Map preparation/mission planning.

(d) Onboard navigation systems.

(e) Aircraft Signatures.

(2) Introduce

(a) Dead reckoning navigation to at least four points using pre-computed times and airspeeds.

(b) Altitude at 500-1,000 feet AGL.

(3) Review. 1:250,000 maps/onboard navigation systems.

Performance Standards

Pilot shall perform a night navigation route utilizing a 1:250,000 map remaining within 500 meters of course for a minimum of four checkpoints at night.

Prerequisite. NAV-131 and FAM-117.

Ordnance. None.

External Syllabus Support. None.

NAV-133 1.5 1 CH-46E A N NS

Goal. Introduce NVG navigation.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual, MAWTS-1 NVD Manual)

(a) Map preparation.

(b) Cockpit interior lighting.

(c) CRM.

(d) Crew comfort levels.

(e) Inadvertent IMC.

(f) NVG navigation techniques.

(g) Onboard navigation systems.

(h) Aircraft survivability equipment.

(2) Introduce/Evaluate

(a) Navigation to at least five points using 1:250,000 maps.

(b) Altitude 200-500 feet AGL.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform a navigation route utilizing NVGs remaining within 500 meters of course for a minimum of five checkpoints.

Prerequisite. NAV-132 and FAM-119.

Ordnance. None.

External Syllabus Support. NVGs.

4. Confined Area Landings (CAL)

a. Purpose. To develop takeoff and landing skills in confined areas.

b. General. Maneuver descriptions; refer to paragraph 131.1b.

(1) Pilots will be prepared to discuss the seven critical steps of CRM applicable to each event.

(2) Prerequisite. Refer to paragraph 131.1.e.

c. Crew Requirement. IP/RAC/CC.

d. Ground Training. Refer to paragraph 131.1d.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/2 Flights, 3.0 Hours).

SCAL-140 2.0 C S

Goal. Introduce confined area work.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual)

(a) CRM.

(b) Aircraft clearance.

(c) Zone brief.

(2) Introduce/evaluate

(a) Confined area approach.

(b) Confined area landing.

(c) Masking/unmasking.

(d) Low level quick stops.

(e) Bunts/rolls.

(f) Low level flight.

(3) Emergencies

(a) ETS operation.

(b) Emergency landing in trees.

(c) Others as required.

Performance Standards

Pilot shall perform landing to a confined area emphasizing obstacle clearance and TERF Maneuvers IAW CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

CAL-141 1.5 C,R 1 CH-46E A

Goal. Introduce confined area work.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual)

(a) CRM.

(b) Aircraft clearance.

(c) Zone brief.

(d) Confined area approaches and landings.

(e) Aircraft vulnerability.

(2) Demonstrate. Mainmount landing.

(3) Introduce/Evaluate

(a) Confined area approach.

(b) Confined area landing.

(c) Obstacle Approach.

(d) Waveoff.

(e) Obstacle takeoff.

(4) Emergencies

(a) Emergency landing in trees.

Performance Standards

Pilot shall perform confined area landings to an unprepared surface.

Prerequisite. FAM-116, appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. Confined area landing zones.

CAL-142 1.5 C 1 CH-46E A N NS

Goal. Introduce NVG CALs.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) NVG failures.

(2) Introduce/Evaluate. NVG confined area landings/takeoffs at various unlighted CAL zones.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform confined area landings to an unprepared surface utilizing NVGs.

Prerequisite. FAM-119 and CAL-141.

Ordnance. None.

External Syllabus Support. NVGs, CAL zones.

5. Formation (FORM)

a. Purpose. To develop parade and cruise formation principles and techniques.

b. General. Refer to paragraph 131.1b. Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

c. Crew Requirements. IP/RAC/CC.

d. Ground Training. Refer to paragraph 241.1e.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/2 Flights, 3.0 Hours).

SFORM-150 2.0 C S

Goal. Introduce day and night (unaided) formation procedures.

Requirement

(1) Discuss

(a) Aircraft lighting and use.

(b) Radar altimeter use.

(c) CRM.

(d) Night scan.

(e) Visual cues for night formation.

(f) Depth perception/relative motion at night.

(g) Hazards peculiar to night formation.

(2) Introduce/Evaluate

(a) Section takeoff.

(b) Cruise formation.

(c) Parade formation.

(d) Breakup and Rendezvous.

1 Running rendezvous.

2 Carrier rendezvous.

(e) Crossovers.

1 Cruise crossovers.

2 Parade crossovers.

(f) Turns.

1 Cruise turns.

2 Parade turns.

(g) Lead Changes.

1 Cruise lead changes.

2 Parade lead changes.

(h) Section landings.

(3) Emergencies. Electrical system malfunctions or as required.

Performance Standards

Pilot shall perform confined area landings to an unprepared surface utilizing NVGs.

Prerequisite. Appropriate FRS ISD program lessons and SCAL-140.

Ordnance. None.

External Syllabus Support. NVGs, WST/APT.

FORM-151 1.5 C, R 2 CH-46E A

Goal. Introduce formation procedures.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual)

(a) Cruise principles.

(b) Radius of turn concept.

(c) Formation types.

(d) Break up and rendezvous.

(e) Overrun.

(2) Introduce/Evaluate

(a) Cruise formation.

(b) Cruise turns.

(c) Section cruise confined area takeoffs and landings.

(d) Lead change.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform cruise formation flight and five section cruise landings to an unprepared surface.

Prerequisite. CAL-141, appropriate FRS ISD Lessons.

Ordnance. None.

External Syllabus Support. CAL zones.

FORM-152 1.5 C 2 CH-46E A

Goal. Introduce parade formation procedures.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual)

(a) Hand/light signals.

(b) Parade principles.

(2) Introduce/Evaluate

(a) Parade formation.

(b) Crossovers.

(c) Parade turns.

(d) Lead changes.

(e) Section parade takeoffs/landings to an OLF.

(3) Emergencies. Perform as required.

Performance Standards

Pilot shall perform parade formation flight and section parade landings to an improved surface safely.

Prerequisite. FORM-151, appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. Prepared surface runway.

6. External Loads (EXT)

a. Purpose. To develop skills necessary for external cargo operations.

b. General. Refer to paragraph 241.1b.

(1) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

(2) Prerequisite. Refer to paragraph 241.1d.

c. Crew Requirements. IP/RAC/CC.

d. Ground Training. Refer to paragraph 241.1e.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

SEXT-160 2.0 C S

Goal. Introduce day and night external cargo operations.

Requirement

(1) Discuss

(a) HST signals.

(b) Power available versus power required limitations.

(c) CRM.

(d) Crew comfort level.

(e) Obstacle clearance.

(f) Aircraft lighting.

(g) Load and pendant lighting.

(2) Introduce/Evaluate

(a) Configure aircraft for external cargo.

(b) Approach to pickup zone.

(c) Cargo hookup.

(d) Departure from pickup zone.

(e) Enroute phase.

(f) Cargo delivery.

(g) Simulated hoist operations.

(h) External cargo operations to a confined area.

(i) Obstacle takeoff with external cargo.

(j) Confined area landings.

(k) Steep approach to a confined area.

(3) Emergencies. Perform as required.

(a) Failure of one engine with an external load.

(b) Loss of ICS.

(c) Aerodynamically unstable/oscillating loads.

(d) Cargo jettison.

Performance Standards

Pilot shall perform five pickups and dropoffs to a confined zone.

Prerequisite. SCAL-140, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

EXT-161 1.5 C,R 1 CH-46E A

Goal. Introduce external cargo operations.

Requirement

(1) Discuss

(a) Inadvertent IMC while conducting external operations.

(b) Approach to pickup zone.

(c) Cargo hookup.

(d) Departure from pickup zone.

(e) Enroute phase.

(f) Cargo delivery.

(g) External operations to a confined area.

(h) Obstacle takeoff with external cargo.

(i) Standard terminology.

(j) Hook/pendant preflight.

(k) Cargo jettisoning.

(l) Loss of ICS.

(2) Introduce/Evaluate

(a) Pickup and delivery of FMF equipment (when available).

(b) External cargo operations to a confined area.

(c) Obstacle takeoff with external cargo.

(3) Review/Evaluate

(a) Confined area landings.

(b) Steep approach to a confined area.

(c) Obstacle takeoff.

(4) Emergencies. Perform as required.

Performance Standards

Pilot shall perform five pickups and dropoffs of external load within 10 meters to a confined area.

Prerequisite. CAL-141, appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. HST team, external load, pendant, hook, and CAL zones.

7. Terrain Flight (TERF)

a. Purpose. To introduce the PUI to Terrain Flight (TERF) operations and maneuvers.

b. General. Maneuver descriptions; refer to CH-46E FRS Standardization Manual and CH-46E TAC Manual.

(1) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

(2) Prerequisite. SCAL-140.

c. Crew Requirements. IP/RAC/CC/AO.

d. Ground Training. FRS TERF class..

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

TERF-171 1.5 C R 1 CH-46E A

Goal. Introduce TERF operations.

Requirement

(1) Discuss. (ref: CH-46E NATOPS Manual, CH-46E Flight Standardization Manual, CH-46E TAC Manual)

(a) CRM.

(b) Aircraft clearance.

(c) Emergencies in TERF environment.

(d) TERF maneuvers.

(2) Introduce/evaluate

(a) Maximum performance takeoff.

(b) Performance checks.

(c) Masking/unmasking.

(d) Low level quick stops.

(e) Bunts/rolls.

(f) Low level flight/turns.

(g) Zoom climb.

(h) Spiral climbout/approach.

(i) Low level approach.

(j) Offset approach.

(3) Emergencies

(a) ETS operation.

(b) Emergency landing in trees.

(c) Others as required.

Performance Standards

Pilot shall perform TERF maneuvers emphasizing obstacle clearance IAW CH-46E TAC Manual.

Prerequisite. FAM-116, appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. Low level TERF area in controlled airspace.

8. Review (REV)

a. Purpose. To demonstrate proficiency in performing duties as a Combat Capable copilot per NATOPS and other appropriate publications.

b. General. All pilots under instruction (B,C,R) shall complete SREV-170. Moreover, all CH-46 pilots shall fly this event once per month if an approved simulator is available. If an approved simulator is not available, the squadron NATOPS officer may substitute a written examination on normal and emergency procedures.

(1) Pilots will be prepared to discuss the seven critical steps of CRM as applicable to each event.

(2) Prerequisite. Refer to paragraph 231.1d.

c. Crew Requirements. IP/RAC/CC.

d. Ground Training. Completion of NATOPS closed book examination.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

SREV-180 2.0 C,R S

Goal. Review previous maneuvers and emergencies.

Requirement

(1) Review/Evaluate

(a) FAM stage maneuvers.

(b) Instrument stage maneuvers.

(c) Confined area landings.

(2) Emergencies. Perform all previously introduced emergencies.

Performance Standards

Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS and FRS Standardization Manuals.

Prerequisite. Appropriate FRS ISD program lessons.

Ordnance. None.

External Syllabus Support. WST/APT.

REV-181 1.5 1 CH-46E A

Goal. Review previous maneuvers and emergencies.

Requirement

(1) Review/Evaluate. All maneuvers from all previous Combat Capable flights.

(2) Emergencies. All previously introduced emergencies.

Performance Standards

Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS and FRS Standardization Manuals.

Prerequisite. SREV-180.

Ordnance. None.

External Syllabus Support. None.

9. Combat Capable Pilot Check (CCX)

a. Purpose. The PUI will demonstrate proficiency in performing duties as a Combat Capable copilot per this syllabus, NATOPS and other appropriate publications.

b. General

(1) At the completion of CCX-182, the PUI shall be designated a Helicopter Second Pilot (H2P) in the CH-46E.

(2) The PUI is responsible for any/all maneuvers and emergencies contained in the Combat Capable phase.

(3) Prerequisite. The PUI shall meet all ISD and NATOPS prerequisites prior to this flight.

c. Crew Requirements. IP/RAC/CC.

d. Academic Training. Completion of open and closed book examinations.

e. Flight Training. (1 Flight, 1.5 Hours).

CCX-182 1.5 C,R,M E 1 CH-46E A

Goal. RAC/Refresher NATOPS evaluation.

Performance Standards

Pilot shall perform all FAM maneuvers and emergencies IAW CH-46E NATOPS, TAC Manual and FRS Standardization Manuals.

Prerequisite. REV-181.

Ordnance. None.

External Syllabus Support. None.

132. COMBAT READY PHASE

1. Familiarization (FAM)

a. Purpose. To review day and night unaided FAM maneuvers, navigation procedures, and basic instrument procedures.

b. General

(1) Pilots will find FAM maneuver descriptions in the NATOPS Manual and FRS Stan manual.

(2) The NATOPS Instrument Flight Manual (NAVAIR 00-80T-112) defines basic instrument procedures.

(3) Pilots shall discuss CRM as applicable to each event.

(4) Prerequisite. CCX-182.

c. Crew Requirements. P/P/CC.

d. Ground/Academic Training. N/A.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/2 Flights, 3.0 Hours).

SFAM-200 2.0 C 1 CH-46E S

Goal. Review day and night unaided familiarization maneuvers and basic instrument procedures.

Requirement

(1) Discuss

(a) Familiarization maneuvers.

(b) Aircraft lighting and use.

(c) Night scan.

(d) Night fixation.

(e) CRM.

(f) Basic instrument procedures.

(2) Introduce. N/A.

(3) Review

(a) Familiarization maneuvers.

(b) Operations at lighted and unlighted fields.

(c) Basic instrument procedures to include turn patterns, vertical S-1 patterns, Oscar patterns, partial panel flight, and instrument autorotations.

(d) Emphasize emergency procedures that pilot cannot fly in the aircraft; i.e., dual engine failure, full autorotation, flex shaft failure, ECA malfunctions, compressor stalls, etc.

Performance Standards

IAW NATOPS/Instrument Flight Manuals.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/APT.

FAM-201 1.5 C 1 CH-46E A

Goal. Review day familiarization maneuvers, navigation above 200 ft, and basic instrument procedures.

Requirement

(1) Discuss

(a) CRM.

(b) Local course rules.

(c) Map preparation.

(d) Route selection.

(2) Introduce. N/A.

(3) Review

(a) FAM stage maneuvers.

(b) Basic instrument procedures to include turn patterns, vertical S-1 patterns, Oscar pattern, partial panel flight, and instrument autorotations.

(c) Instrument approaches.

(d) Navigation above 200 ft using a minimum of five checkpoints.

(e) Emergency procedures, as required.

(f) CNCS operation.

Performance Standards

Pilot shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, established pattern checkpoints, recognize closure rate to a landing point, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. SFAM-200.

Ordnance. None.

External Syllabus Support. Landing areas.

FAM-202 1.5 C 1 CH-46E A N

Goal. Review night FAM maneuvers, basic instrument scan, and navigation above 200 ft.

Requirement

(1) Discuss

(a) Aircraft lighting and use.

(b) Night scan.

(c) Night fixation.

(d) CRM.

(e) Map preparation.

(f) Route selection.

(2) Introduce. N/A.

(3) Review

(a) Operations at a lighted field to include FAM stage maneuvers.

(b) Navigation above 200 ft using a minimum of five checkpoints.

(c) Instrument scans for night operations.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. Lighted landing areas.

2. Confined Area Landings (CAL)

a. Purpose. To develop proficiency in takeoffs and landings in a confined area.

b. General. Pilots will find maneuver descriptions in the NATOPS Flight Manual and NWP 3-22.5-CH46E. Pilots shall discuss CRM as applicable to each event.

c. Crew Requirements

(1) CAL-211/212. P/CP/CC.

(2) CAL-213. P/CP/CC/AO.

d. Ground/Academic Training. N/A.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/3 Flights, 4.5 Hours).

SCAL-210 2.0 C 1 CH-46E S

Goal. Conduct day and night single and multiple aircraft confined area landings, tactical approaches and departures.

Requirement

(1) Discuss

(a) Low/high threat tactical approaches, landings and departures to a confined area.

(b) Power settling/settling with power.

(c) Low altitude emergency procedures (i.e., landing in trees).

(d) Power requirements at high gross weights to effect safe takeoffs/landings.

(e) LZ brief/evaluation.

(2) Introduce

(a) Low/high threat tactical approaches.

(b) Landings and departures to a confined area.

(c) CRM.

(d) Crew comfort level.

(e) Night fixation.

(f) Effects of wind.

(g) Landing in valleys and canyons.

(h) Crosswind, upslope, and downslope landings with respect to tail clearance. Use of taxi/forward cyclic trim position.

(3) Review. CAL-141.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate Power Management, maintain safe obstacle clearance, and land within two rotors of intended point of landing.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/APT.

CAL-211 1.5 C R 1 CH-46E A

Goal. Conduct single aircraft confined area landings, tactical approaches and departures.

Requirement

(1) Discuss

(a) Low/high threat tactical approaches, landings and departures to a confined area.

(b) Power settling/settling with power.

(c) Low altitude emergency procedures (i.e., landing in trees).

(d) Power requirements at high gross weights to effect safe takeoffs/landings (power checks).

(e) Rotor blade clearances (blade walk).

(f) LZ brief/evaluation.

(2) Introduce

(a) Low/high threat tactical approaches.

(b) Landings and departures to a confined area.

(c) CRM.

(d) Crew comfort level.

(e) Effects of wind.

(f) Landing in valleys and canyons.

(g) Crosswind, upslope, and downslope landings with respect to tail clearance.

(h) Use of taxi/forward cyclic trim position.

(3) Review. CAL-141.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate Power Management, maintain safe obstacle clearance, and land within two rotors of intended point of landing.

Prerequisite. SCAL-210.

Ordnance. None.

External Syllabus Support. Landing zones.

CAL-212 1.5 C R 2 OR MORE ACFT A (N)

Goal. Conduct multiple aircraft tactical approaches, landings and departures to a confined area.

Requirement

(1) Discuss

(a) Section and division tactical approaches.

(b) Landings and departures to a confined area in all threat environments.

(2) Introduce

(a) Section/division tactical approaches (if applicable).

(b) Landings and departures to a confined area in all threat environments.

(3) Review. FORM-151.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate Power Management, maintain safe obstacle clearance, land within two rotors of intended point of landing (lead), and maintain section integrity during approach and landing (wingman).

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. LZ to accommodate a section.

CAL-213 1.5 C 1 CH-46E A N

Goal. Introduce unaided night CALs.

Requirement

(1) Discuss/Introduce

(a) CRM.

(b) Crew comfort levels.

(c) Night fixation.

(d) Night CAL takeoffs, approaches, and landings to various unlighted CAL zones.

(e) Use of landing and searchlights.

(f) LZ brief/evaluation.

(2) Review. N/A.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure rate to landing point, remain oriented in zone, demonstrate Power Management, maintain safe obstacle clearance, and land within two rotors of intended point of landing.

Prerequisite. FAM-202, CAL-211.

Ordnance. None.

External Syllabus Support. Landing zones.

3. External Cargo Operations (EXT)

a. Purpose. To develop proficiency in day external cargo operations and introduce external cargo operations in a confined area with close coordination of Helicopter Support Team (HST).

b. General. Pilots shall discuss CRM as applicable to each event.

c. Crew Requirements. P/P/CC.

d. Ground/Academic Training

(1) Read appropriate chapters of the NATOPS Manual.

(2) Read appropriate paragraphs of the NWP 3-22.5-CH46E.

(3) Read appropriate chapters in FMF RP 5-31, Multiservice Helicopter Air Transport Manual.

e. Simulator Event and Flight Training. (2 Events, 2.0 Hours/1 Flight, 1.5 Hours).

SEXT-220 2.0 C S

Goal. Conduct day external load hookups and drops to a confined area.

Requirement

(1) Discuss

(a) CRM during external load operations.

(b) Tactical considerations during external lift operations.

(c) Emergency procedures with external loads.

(2) Introduce. None.

(3) Review. External load hookups and drops to a confined area.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, utilize solid instrument scan, demonstrate proper CRM/voice commands, properly respond to crew positioning calls, recognize closure/descent rates, maintain briefed clearance below load, maintain situational awareness of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of HOGE requirements, complete a minimum of five hookups and drops, place load within 5 meters of intended point of drop.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/APT/operable TEN.

EXT-221 1.5 C 1 CH-46E A

Goal. Review external load operations from a confined area.

Requirement

(1) Discuss

(a) CRM during external load operations.

(b) Tactical considerations during external lift operations.

(c) Hoist and winch operations.

(d) Emergency procedures during external operations.

(e) Command jettisoning procedures.

(f) HST Brief.

(2) Introduce. None.

(3) Review. EXT-161.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, utilize solid instrument scan, demonstrate proper CRM/voice commands, properly respond to crew positioning calls, recognize closure/descent rates, maintain briefed clearance below load, maintain situational awareness of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of HOGE requirements, complete a minimum of five hook ups and drops, place load within 5 meters of intended point of drop.

Prerequisite. SEXT-220, CAL-211.

Ordnance. None.

External Syllabus Support. HST, external Load, LZ, hook and pendant.

4. Formation Flight (FORM)

a. Purpose. To review formation and introduce tactical formation maneuvering.

b. General. Pilots shall discuss CRM as applicable to each event.

c. Crew Requirements. P/P/CC/AO.

d. Ground/Academic Training. Review tactical formation flight in NWP 3-22.5-CH46E, MAWTS-1 ASP, and DM Guide.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

SFORM-230 2.0 C S

Goal. Review section formation and introduce tactical section/division formation maneuvering.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort level.

(c) Closure rate.

(d) Lead changes (to include EMCON).

(e) Common terminology.

(f) Division formation, emphasize dash-3 position.

(g) Tactical formation maneuvering.

(h) Appropriate formation maneuvers against a FW threat, RW threat, IR missile threat, radar guided missile threat, and AAA threat.

(i) Intra and inter aircraft communications.

(j) Inadvertent IMC.

(2) Introduce

(a) Break turns, center turns, pinch/dig, cover, tac turns, in-place turns, split turns, cross turns.

(b) Combat spread and combat cruise.

(3) Review

(a) Parade formation.

(b) Section takeoffs/landings.

(c) Cruise principles, crossover, break-up and rendezvous, and lead changes.

Performance Standards

Pilots shall exercise appropriate CRM, maintain situational awareness, maintain section integrity and mutual support, maintain appropriate cruise formation and rotor separation throughout maneuvers, utilize radius of turn principles, and employ appropriate commands to maneuver flight.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/APT/operable TEN.

FORM-231 1.5 C,R 2 CH-46E A

Goal. Review formation and introduce tactical formation maneuvering.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort level.

(c) Closure rate.

(d) Lead changes (to include EMCON).

(e) Common terminology.

(f) Division formation, emphasize dash-3 position.

(g) Tactical formation maneuvering.

(h) Appropriate formation maneuvers against a FW threat, RW threat, IR missile threat, radar guided missile threat, and AAA threat.

(i) Intra and inter aircraft communications.

(j) Inadvertent IMC.

(2) Introduce

(a) Break turns, center turns, pinch/dig, cover, tac turns, in-place turns, split turns, cross turns.

(b) Combat spread and combat cruise.

(3) Review. Cruise principles, turn patterns, crossover, break-up and rendezvous, and lead changes.

Performance Standards

Pilots shall exercise appropriate CRM, maintain situational awareness, maintain section integrity and mutual support, maintain appropriate cruise formation and rotor separation throughout maneuvers, utilize radius of turn principles, and employ appropriate commands to maneuver flight.

Prerequisite. SFORM-230.

Ordnance. None.

External Syllabus Support. None.

5. Terrain Flight (TERF)

a. Purpose. To qualify the PUI in TERF operations and navigation procedures.

b. General. TERF 241-243 instructional flights require a TERF Instructor. Successful completion of TERF-243 constitutes TERF Qualified. A qualification letter signed by the commanding officer stating the pilot is TERFQ is required. The original shall be placed in the pilots NATOPS jacket

and a copy in the pilots APR with a corresponding logbook entry. T&R Manual, Administrative establishes TERF altitude restrictions and currency requirements.

c. Crew Requirements. P/P/CC/AO.

d. Ground/Academic Training. Complete the TERF academic classes listed in the MAWTS-1 ASP prior to being designated TERF qualified. Review appropriate paragraphs of NWP 3-22.5-CH46E.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/3 Flights, 5.0 Hours).

STERF-240 2.0 C S

Goal. Conduct single and multiple aircraft TERF maneuvers in the low level and contour profiles.

Requirement

(1) Discuss

(a) CRM during TERF.

(b) Crew comfort level during TERF.

(c) Emergency procedures in TERF environment.

(d) TERF maneuvers (bunts, rolls, quick-stops, masking and unmasking).

(e) Differences between low level, contour and NOE flight.

(f) Map preparation and route selection.

(g) Mission planning systems.

(h) Demonstrate effective cockpit management for precision navigation.

(2) Introduce. Contour and low level flight.

(3) Review. TERF maneuvers (bunts, rolls, quick-stops, masking and unmasking).

Performance Standards

Pilots shall plan and fly a route to a minimum of six checkpoints below 200 ft AGL, TERF navigation utilizing 1:250,000 and 1:50,000 scale maps as appropriate, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation (CNCS as secondary source), utilize proper terminology, as lead retain situational awareness of wingman position and drive section appropriately, as wingman retain situational awareness during navigation, tac form maneuvers utilized properly to control flight.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/APT/operable TEN.

TERF-241 1.5 1 CH-46E A

Goal. Conduct TERF maneuvers in low level and contour profiles.

Requirement

(1) Discuss

(a) CRM during TERF.

(b) Crew comfort level during TERF.

(c) Emergency procedures during TERF.

(d) TERF maneuvers (bunts, rolls, quick-stops, masking/unmasking).

(e) Differences between types of TERF flight.

(f) Map preparation (hazards, etc).

(g) Low altitude emergencies.

(2) Introduce. TERF maneuvers (bunts, rolls, quick-stops, masking/unmasking).

(3) Review. Blade walk/power checks.

Performance Standards

Ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, and utilize proper terminology.

Prerequisite. STERF-240.

Ordnance. None.

External Syllabus Support. TERF area (restricted areas preferred).

TERF-242 1.5 1 CH-46E A

Goal. Navigate a TERF route in low level and contour profiles.

Requirement

(1) Discuss

(a) CRM during TERF navigation.

(b) Common terminology used during TERF navigation.

(c) Hazard maps.

(d) Tactical map preparation (1:50,000 & 1:250,000).

(e) Time/distance checks.

(f) CNCS employment considerations.

(2) Introduce

(a) Navigate a TERF route with a minimum of five checkpoints in the contour profile and remain oriented within 500 meters of course line.

(b) Onboard navigation systems.

(3) Review. TERF-241.

Performance Standards

Pilots shall plan and fly a route to a minimum of five checkpoints at or below 200 ft AGL, TERF navigation utilizing 1:250,000 and 1:50,000 scale maps as appropriate, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation (CNCS as secondary source), utilize proper terminology.

Prerequisite. TERF-241.

Ordnance. None.

External Syllabus Support. Approved TERF route (restricted area preferred).

TERF-243 2.0 C,R 2 CH-46E A

Goal. Tactical formations and navigation in the low level and contour profiles in the TERF environment.

Requirement

(1) Discuss

(a) CRM during formation flight in TERF environment.

(b) Common terminology.

(c) Altitude awareness.

(d) NOE considerations.

(2) Introduce. Tactical formations in the low level and contour profiles.

(3) Review. TERF-242 and FORM-231.

Performance Standards

Pilots shall plan and fly a route to a minimum of five checkpoints as lead below 200 ft AGL, properly control flight utilizing TACFORM maneuvers in the TERF environment, TERF navigation utilizing 1:50,000 and 1:250,000 scale maps as appropriate, remain oriented on route within 200 meters, ensure effective CRM for navigation, altitude and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, and as wingman, retains situational awareness during navigation.

Prerequisite. TERF-242.

Ordnance. None.

External Syllabus Support. Approved TERF route (restricted area preferred).

6. NVGs High Light Level (HLL)

a. Purpose. To develop skill in the use of NVGs under light levels greater than .0022 lux (HLL)) as predicted by the computer generated light level calendar and to qualify the PUI in NVG HLL operations.

b. General

(1) All initial and Refresher instructional flights require a Night Systems Instructor (NSI).

(2) Successful completion of NVG-257 constitutes Night Systems Qualified (NSQ) HLL. A qualification letter signed by the commanding officer stating the pilot is NSQ HLL is required to be qualified to carry troops under HLL conditions. The original shall be placed in the pilot's NATOPS jacket, and a copy in his APR with a corresponding logbook entry.

c. Crew Requirements. P/P/CC/AO.

d. Ground/Academic Training

(1) Complete the Night Systems Classes listed in the MAWTS-1 ASP prior to flying first flight on NVGs.

(2) Review appropriate chapters/sections in the MAWTS-1 NVD Manual and NWP 3-22.5-CH46E.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/7 Flights, 10.5 Hours).

SNVG-250 2.0 C S NS

Goal. Introduce NVG single and multiple aircraft FAM, CALs, and TERF/Navigation in HLL.

Requirement

(1) Discuss

(a) CRM during NVG CAL operations.

(b) Crew comfort level during NVG CAL operations.

(c) Scan technique during FAM maneuvers.

(d) NVG low altitude emergencies.

(2) Introduce

(a) Section CALs in HLL.

(b) NVG HUD operations.

(3) Review

(a) NVG preflight/set up.

(b) Single aircraft CALs in HLL.

Performance Standards

Pilots shall plan and fly a route to a minimum of four checkpoints below 200 ft AGL, maintain effective NVG/instrument scan, recognize proper closure rate with intended point of landing, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during navigation, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/APT/operable TEN.

NVG-251 1.5 C,R 1 CH-46E A N NS

Goal. Review NVG single aircraft CALs in HLL.

Requirement

(1) Discuss

(a) CRM during NVG CAL operations.

(b) Crew comfort level during NVG CAL operations.

(c) NVG failures at low altitudes.

(d) Light level planning requirements.

(e) Inadvertent IMC.

(f) NVG preflight/set up.

(g) LZ brief and evaluation.

(2) Introduce. NVG HUD operation if available.

(3) Review. Single aircraft CALs in HLL.

Performance Standards

Pilots shall maintain effective NVG/instrument scan, recognize proper closure rate with intended point of landing, retain positive aircraft control, demonstrate effective cockpit management, utilize proper terminology, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. SNVG-250.

Ordnance. None.

External Syllabus Support. NVG landing zones.

NVG-252 1.5 C 2 CH-46E A N NS

Goal. Conduct NVG formation flight in HLL.

Requirement

(1) Discuss

(a) CRM during NVG formation operations.

(b) NVG formation techniques.

(c) Aircraft lighting during NVG formation.

(d) Inadvertent IMC.

(e) NVG combat cruise.

(f) NVG failures during formation flight.

(2) Introduce. NVG formation flight (i.e., turn pattern).

(3) Review. FORM-231, CNCS employment if available, turn patterns and break up/rendezvous.

Performance Standards

Pilots shall maintain effective NVG/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, demonstrate effective cockpit

management, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, and wingman maintains proper NVG combat cruise position.

Prerequisite. FORM-231, NVG-251.

Ordnance. None.

External Syllabus Support. None.

NVG-253 1.5 C,R 2 CH-46E A N NS

Goal. Conduct NVG tactical section approaches, landings, and departures to a confined area in HLL.

Requirement

(1) Discuss

(a) CRM during NVG section CALs.

(b) Section tactical approach, landings and departures to a confined area while using NVGs in HLL.

(c) LZ brief and evaluation.

(2) Introduce. Section tactical approach, landings and departures to a confined area while using NVGs in HLL.

(3) Review. CAL-212, NVG-251 and NVG-252.

Performance Standards

Pilots shall maintain effective NVG/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. CAL-212, NVG-252.

Ordnance. None.

External Syllabus Support. NVG landing zones.

NVG-254 1.5 C 3 OR MORE CH-46E A N NS

Goal. Conduct NVG division formation and CALs emphasizing the dash three position.

Requirement

(1) Discuss

(a) CRM during NVG formation and CALs.

(b) NVG division CAL techniques.

(c) NVG division formation techniques.

(d) Inadvertent IMC on NVGs.

(e) Obstacle clearance.

(f) LZ brief and evaluation.

(2) Introduce

(a) NVG division formation.

(b) NVG division CALs.

(3) Review. NVG-252 and NVG-253.

Performance Standards

Pilots shall maintain effective NVG/instrument scan, ensure effective CRM for formation and obstacle clearance, recognize proper closure rate with intended point of landing, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. NVG-253.

Ordnance. None.

External Syllabus Support. NVG landing zones.

NVG-255 1.5 C 1 CH-46E A N NS

Goal. Conduct NVG TERF navigation.

Requirement

(1) Discuss

(a) CRM during NVG TERF navigation.

(b) NVG navigation techniques.

(c) Use of onboard navigation systems.

(d) Moon illumination/shadow effects on NVG navigation.

(e) NVG low altitude emergencies.

(2) Introduce

(a) NVG TERF navigation.

(b) Navigate a route below 200 ft AGL with at least four checkpoints and remain oriented within 500 meters of course line.

(3) Review. TERF-243, Use of onboard navigation systems.

Performance Standards

Pilots shall plan and fly a route to a minimum of four checkpoints below 200 ft AGL, maintain effective NVG/instrument scan, recognize proper closure rate with intended point of landing, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology.

Prerequisite. TERF qualified and NVG-251 complete.

Ordnance. None.

External Syllabus Support. NVG TERF route.

NVG-256 1.5 C 2 CH-46E A N NS

Goal. Conduct NVG TERF formation, navigation flight.

Requirement

(1) Discuss

(a) CRM in the NVG TERF environment.

(b) NVG TERF/formation techniques.

(c) NVG HUD utilization.

(d) NVG low altitude emergencies.

(2) Introduce. NVG TERF formation flight.

(3) Review. TERF-243 and NVG-252.

Performance Standards

Pilots shall maintain effective NVG/instrument scan, recognize proper closure rate with intended point of landing, ensure effective CRM for formation and obstacle clearance, retain positive aircraft control, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during flight, employs NVG combat cruise principles, plan and fly a route to a minimum of four checkpoints below 200 ft AGL, remain oriented on route within 500 meters,

demonstrate effective cockpit management for precision navigation.

Prerequisite. TERF qualified, NVG-252 and NVG-255.

Ordnance. None.

External Syllabus Support. NVG TERF route (restricted area preferred).

NVG-257 1.5 C,R 2 CH-46E A N NS

Goal. Conduct NVG TERF formation, navigation, and section CALs.

Requirement

(1) Discuss

(a) NVG low-level emergencies.

(b) LZ brief/evaluation.

(2) Introduce. N/A.

(3) Review. NVG-253, NVG-256.

Performance Standards

Pilots shall navigate a route below 200 ft AGL with at least four checkpoints and remain oriented within 500 meters of course line, arrive at the final checkpoint within 2 minutes of the planned arrival time, maintain effective NVG/instrument scan, recognize proper closure rate with intended point of landing, remain oriented on route within 500 meters, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman retains situational awareness during navigation, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, and land within two rotors of intended point of landing.

Prerequisite. NVG-254, 255, and 256.

Ordnance. None.

External Syllabus Support. NVG LZ and approved TERF route (restricted area preferred).

7. Air-to-Ground (AG)

a. Purpose. To develop CRM proficiency during AG.

b. General. N/A.

c. Crew Requirements. P/P/CC/AG.

d. Ground/Academic Training

(1) Review appropriate chapters of the NWP 3-22.5-CH46E.

(2) Review appropriate chapters of the CH-46 NATOPS Manual.

(3) The PUI must complete the AG Academic class listed in the MAWTS-1 ASP prior to AG-281.

(4) The PUI shall review the MAWTS-1 AG Manual prior to AG-281.

e. Flight Training. (1 Flight, 1.5 Hours).

AG-281 1.5 C 1 OR MORE CH-46E A

Goal. Introduce AG procedures.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Weapons preflight.

(d) Types of ammunition.

(e) Standard weapons commands.

(f) Lost communication procedures.

(g) Visual signals.

(h) Weapons safety considerations, malfunctions/emergencies.

(i) Weapons conditions.

(j) Sectors/Fields of fire.

(k) Shadow gunnery techniques.

(l) Towed target (banner) techniques.

(m) Moving target techniques.

(2) Introduce. AG.

(3) Review. None.

Performance Standards

Pilots shall use proper weapon procedures and commands to direct AG, demonstrate understanding of weapons parameters and employment, demonstrate proper response to weapon malfunctions, demonstrate proper understanding of aircraft maneuvers in response to threat, demonstrate understanding of

briefed ROE, demonstrate understanding of weapons conditions, fly weapons delivery profile in accordance with briefed parameters, and demonstrate understanding of weapons control within briefed fields of fire and sectors of fire.

Prerequisite. None.

Ordnance. 500 rounds of .50 cal, 2 smoke grenades.

External Syllabus Support. Appropriate AG range, moving land target (if available).

8. Carrier Qualification (CQ)

a. Purpose. To qualify the PUI in day, night unaided, and NVG FCLPs.

b. General. Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for Shipboard Operations.

(1) An NSI is required for initial NVG FCLP flights.

(2) Night CQ Requirements:

(a) For initial/Refresher/delinquent:

- Five day FCLPs.
- Five NVG FCLPs.
- Five night unaided FCLPs.

(b) Pilots previously night CQ and proficient per paragraph 142.8b(2)(a) above shall complete the following to maintain proficiency:

- Two day FCLPs.
- Two NVG FCLPs. (Note: CQ-293 chains CQ-292 and CQ-291).
- Two night unaided FCLPs. (Note: CQ-292 chains CQ-291).

(3) CQ-293 may be flown under any light level condition. PUI must be NSQ for appropriate light level.

(4) Pilots shall discuss CRM as applicable to each event.

c. Crew Requirements

(1) CQ-291, 292. P/P/CC.

(2) CQ-293. P/P/CC/AO.

d. Ground/Academic Training

(1) Review appropriate chapters of NWP 42 and the LPH/LHA/LHD NATOPS Manual.

(2) Review Ship's Facilities Resume.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/3 Flights, 3.0 Hours).

SCQ-290 2.0 C 1 CH-46E S N NS

Goal. Introduce day, night unaided, and NVG CQ.

Requirement

(1) Discuss

(a) CRM during shipboard landings.

(b) Communications used in shipboard environment.

(c) LSE signals.

(d) Emergency procedures over water (water landings/ditching).

(e) Aircraft lighting used during shipboard operations.

(f) Aviation Capable/Air Capable class ships.

(g) Basic instrument scan.

(2) Introduce. Day, night, and NVG CQ patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. Instrument procedures.

Performance Standards

Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument/NVG scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 ft/80 kt pattern within 50 ft and 10 kts, maintain proper closure and bearing with intended point of landing, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 1 meter of intended point of landing.

Prerequisite. SCAL-210.

Ordnance. None.

External Syllabus Support. FMC WST/APT/TEN.

CQ-291 1.0 C 1 CH-46E A

Goal. Conduct day FCLPs.

Requirement

(1) Discuss

(a) CRM during shipboard landings.

(b) Communications used during shipboard landings.

(c) LSE signals.

(d) Water landings/ditching.

(e) Aircraft lighting used during shipboard landings.

(f) Basic instrument scan.

(2) Introduce. Day FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. N/A.

Performance Standards

Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 ft/80 kt pattern within 50 ft and 10 kts, maintain proper closure and bearing with intended point of landing, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 1 meter of intended point of landing.

Prerequisite. SCQ-290, CAL-211.

Ordnance. None.

External Syllabus Support. Approved FCLP pad.

CQ-292 1.0 C 1 CH-46E A N

Goal. Conduct night unaided FCLPs.

Requirement

(1) Discuss

(a) CRM during night shipboard landings.

(b) Crew comfort levels during night shipboard landings.

(c) Situational awareness during night shipboard landings.

(d) Aircraft lighting used during night shipboard landings.

(e) Basic instrument scan.

(f) Emergency procedures at night over water.

(2) Introduce. Night FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. N/A.

Performance Standards

Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 ft/80 kt pattern within 50 ft and 10 kts, maintain proper closure and bearing with intended point of landing, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned

landing spot, and land within 1 meter of intended point of landing.

Prerequisite. CAL-213 and CQ-291.

Ordnance. None.

External Syllabus Support. Approved FCLP pad.

CQ-293 1.0 C 1 CH-46E A N NS

Goal. Conduct NVG FCLPs.

Requirement

(1) Discuss

(a) CRM during NVG shipboard landings.

(b) Crew comfort levels during NVG shipboard landings.

(c) Situational awareness during NVG shipboard landings.

(d) Emergency procedures (aircraft and NVGs).

(e) Aircraft and deck lighting during NVG shipboard operations.

(f) Basic instrument scan.

(2) Introduce. NVG FCLPs.

(3) Review. N/A.

Performance Standards

Pilots shall demonstrate proper shipboard communications and aircraft lighting procedures, maintain effective instrument/NVG scan, execute proper cockpit switchology, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, fly 300 ft/80 kt pattern within 50 ft and 10 kts, maintain proper closure and bearing with intended point of landing, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, and land within 1 meter of intended point of landing.

Prerequisite. NVG-251 and CQ-292.

Ordnance. None.

External Syllabus Support. NVD capable FCLP pad.

133. COMBAT QUALIFICATION PHASE

1. Carrier Qualification (CQ)

a. Purpose. To train/refresh the PUI in day and NVG shipboard landings.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) Night CQ Requirements:

(a) For initial/Refresher/delinquent:

- Five day CQs.
- Five NVG CQs.
- Five night unaided CQs.

(b) Pilots previously night CQ and proficient per para 133.1.b.(2)(a) above shall complete the following to maintain proficiency:

- Two day CQs.
- Two NVG CQs. (Note: CQ-301 chains CQ-300 and CQ-491).
- Two night unaided CQs. (Note: CQ-491 chains CQ-300).

(3) CQ-301 shall be flown under HLL conditions for initial qualification. NSI required for initial NVG flights. Currency and requalification flights may be flown under any light level condition.

(4) Pilot is CQ upon completion of CQ-300, CQ-301 and CQ-491.

(5) Pilots are authorized to carry passengers during daylight hours when proficient in CQ-300.

(6) Pilots are authorized to carry passengers under all conditions when proficient in CQ-301 and CQ-491.

(7) Pilots shall discuss CRM as applicable to each event.

c. Crew Requirement

(1) CQ-300, P/P/CC.

(2) CQ-301, P/P/CC/AO (NSI for initial qualification).

d. Academic Training

(1) Review appropriate chapters of NWP-42 and the LPH/LHA/LHD NATOPS Manual.

(2) Review Ship’s Facilities Resume.

e. Flight Training. (2 Flights, 2.0 Hours).

CQ-300 1.0 C 1 CH-46E A

Goal. Conduct day CQ.

Requirement

(1) Discuss

(a) CRM during shipboard landings.

(b) Communications used during shipboard landings.

(c) LSE signals.

(d) Water landings/ditching.

(e) Aircraft lighting used during shipboard landings.

(f) Rotor engagement/disengagement.

(g) Launch/recovery wind envelopes.

(h) Basic instrument scan.

(2) Introduce. Day CQ patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. CQ-291.

Performance Standards

Pilots shall fly 300 ft/80 kt pattern within 25 ft and 10 kts, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, land within 1 meter of intended point of landing, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate understanding of shipboard communications and aircraft lighting.

Prerequisite. CQ-291.

Ordnance. None.

External Support. Air capable ship deck.

CQ-301 1.0 C 1 CH-46E A N NS

Goal. Conduct NVG CQ.

Requirement

(1) Discuss

(a) CRM during shipboard landings.

(b) Communications used during shipboard landings.

(c) LSE signals.

(d) Water landings/ditching.

(e) Aircraft lighting used during shipboard landings.

(f) Rotor engagement/disengagement.

(g) Launch/recovery wind envelopes.

(h) Transition from instrument to NVG scan.

(i) Basic instrument scan.

(j) NVG scan/fixation.

(2) Introduce. NVG CQ patterns, approaches, landings, and emergency procedures peculiar to NVG shipboard operations.

(3) Review. CQ-293, CQ-300.

Performance Standards

Pilots shall fly 300 ft/80 kt pattern within 25 ft and 10 kts, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, land within 1 meter of intended point of landing, maintain effective instrument and NVG scan, recognize proper closure with intended point of landing, demonstrate proper shipboard communications and aircraft lighting.

Prerequisite. CQ-300 and CQ-293.

Ordnance. None.

External Support. NVG capable ship deck.

2. NVGs Low Light Level (LLL)

a. Purpose. Qualify the PUI in NVG (LLL) operations.

b. General. Successful completion of NVG-314 constitutes Night Systems Qualified (NSQ). A qualification letter signed by the commanding officer stating the pilot is NSQ is required to be qualified to carry troops under any ambient light level condition. The original shall be placed in the pilot's NATOPS jacket and a copy in his APR with a corresponding logbook entry.

(1) Prerequisites

(a) NSQ (HLL).

(b) Initial/Refresher flights require an NSI.

(c) Pilots shall fly all events in light levels less than .0022 lux.

c. Crew Requirement. P/P/CC/AO.

d. Academic Training

(1) Appropriate chapters of the MAWTS-1 NVD Manual.

(2) Read appropriate chapters of the NATOPS manual.

(3) Read appropriate paragraphs of the NWP 3-22.5-CH46E.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/4 Flights, 6.0 Hours).

SNVG-310 2.0 C 1 CH-46E S/A NS

Goal. Conduct NVG (LLL) TERF formation, navigation, single, section and division CALs.

Requirement

(1) Discuss

(a) Crew comfort level during NVG (LLL) operations.

(b) NVG (LLL) considerations.

(c) NVG (LLL) CAL techniques.

(d) Aircraft lighting considerations during NVG (LLL) operations.

(e) Low altitude emergencies.

(2) Introduce. NVG (LLL) CALs.

(3) Review. SNVG-250, NVG HUD operations.

Performance Standards

Pilots shall fly a navigation route with at least four checkpoints, fly route below 200 ft AGL, remain oriented on route within 500 meters, arrive at final checkpoint within 1 minute of planned arrival time, maintain effective instrument and NVG scan, recognize proper closure with intended point of landing, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman maintains situational awareness during navigation, Tac form maneuvers utilized properly to control flight, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing.

Prerequisite. TERF-240.

Ordnance. None.

External Syllabus Support. NVG capable WST/APT/TEN.

NVG-311 1.5 C,R 1 CH-46E A N NS

Goal. Introduce single aircraft NVG (LLL) CALs.

Requirement

(1) Discuss

(a) Crew comfort level during NVG (LLL) operations.

(b) NVG (LLL) considerations.

(c) NVG (LLL) CAL techniques.

(d) Aircraft lighting considerations during NVG (LLL) operations.

(e) Low altitude emergencies.

(2) Introduce. NVG (LLL) CALs.

(3) Review. NVG-251, NVG HUD operations if available.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure with intended point of landing, remain oriented on zone, land within 2 rotors of intended point of landing, maintain effective instrument and NVG scan.

Prerequisite. NVG-310.

Ordnance. None.

External Syllabus Support. CAL site.

NVG-312 1.5 C,R 2 CH-46E A N NS

Goal. Introduce NVG (LLL) formation and section CALs.

Requirement

(1) Discuss

(a) CRM during NVG (LLL) formation.

(b) Crew comfort level during NVG (LLL) formation operations.

(c) NVG (LLL) formation techniques.

(d) External aircraft lighting considerations during NVG (LLL) formation operations.

(2) Introduce

(a) NVG (LLL) formation.

(b) NVG (LLL) section CALs.

(3) Review. NVG-252 and NVG-253.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure with intended point of landing, remain oriented on zone, land within 2 rotors of intended point of landing, maintain effective instrument and NVG scan, maintain proper distance and bearing within 3-5 rotors, utilize formation principles of radius of turn, step-up/step-down, recognize proper closure rate with lead aircraft.

Prerequisite. NVG-311.

Ordnance. None.

External Syllabus Support. CAL site.

NVG-313 1.5 3 OR MORE CH-46E A N NS

Goal. Conduct NVG (LLL) formation and division CALs.

Requirement

(1) Discuss

(a) CRM during NVG (LLL) formation.

(b) Crew comfort level during NVG (LLL) formation operations.

(c) NVG (LLL) formation techniques.

(d) External aircraft lighting considerations during NVG (LLL) formation operations.

(2) Introduce

(a) NVG (LLL) division formation.

(b) NVG (LLL) division CALs.

(3) Review. NVG-254 and NVG-312.

Prerequisite. NVG-312.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure with intended point of landing, remain oriented on zone, land within 2 rotors of intended point of landing, maintain effective instrument and NVG scan, maintain proper distance and bearing for appropriate formation position, utilize formation principles of radius of turn, step-up/step-down, recognize proper closure rate with lead aircraft.

Prerequisite. NVG-312.

Ordnance. None.

External Syllabus Support. CAL site.

NVG-314 1.5 C,R 2 CH-46E A N NS

Goal. Conduct NVG (LLL) TERF formation, navigation, and section CALs.

Requirement

(1) Discuss

(a) CRM during NVG (LLL) TERF navigation.

(b) Crew comfort level during NVG TERF operations.

(c) NVG navigation considerations under (LLL) conditions.

(d) Use of onboard navigation systems.

(e) Emergencies at low altitude.

(2) Introduce. NVG (LLL) TERF navigation.

(3) Review. Section CALs, NVG-257, NVG-312, and use of onboard navigation systems (CNCS as secondary source).

Prerequisite. NVG-313.

Performance Standards

Pilots shall fly a navigation route with at least four checkpoints, fly route below 200 ft AGL, remain oriented on route within 500 meters, arrive at final checkpoint within 1 minute of planned arrival time, maintain effective instrument and NVG scan, recognize proper closure with intended point of landing, ensure effective CRM for navigation and obstacle clearance, retain positive aircraft control, demonstrate effective cockpit management for precision navigation, utilize proper terminology, lead retains situational awareness of wingman position and drives section appropriately, wingman maintains situational awareness during navigation, Tac form maneuvers utilized properly to control flight, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, and land within 2 rotors of intended point of landing.

Prerequisite. NVG-313.

Ordnance. None.

External Syllabus Support. CAL site, approved NVG navigation route.

3. Air-to-Ground (AG)

a. Purpose. To develop CRM proficiency during NVG aerial gunnery.

b. Crew Requirement. P/P/CC/AG.

c. Prerequisites

(1) AG-281 and NVG-251.

(2) NSI required if PUI is not NSQ for appropriate light level.

d. Academic Training

(1) Review appropriate chapters of the NWP 3-22.5-CH46E and the MAWTS-1 Helicopter NVD Manual.

(2) Review appropriate chapters of the CH-46E NATOPS Manual.

(3) The PUI should complete the AG Academic Class listed in the MAWTS-1 Course Catalog prior to flying AG-321.

(4) The PUI shall review the MAWTS-1 Aerial Gunnery Manual.

e. Flight Training. (1 Flight, 1.5 Hours).

AG-321 1.5 C 1 CH-46E A N NS

Goal. Introduce NVG AG gunnery.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Weapon preflight.

(d) Standard weapons commands.

(e) Lost communication procedures.

(f) Visual signals.

(g) Weapon malfunctions/stoppage.

(h) LASER employment and considerations/safety precautions.

(i) Sectors of fire/fields of fire.

(j) Shadow gunnery techniques.

(k) Moving target techniques.

(l) Weapon conditions.

(2) Introduce

(a) NVG aerial gunnery.

(b) Effects of ordnance, expendables, pyrotechnics on NVGs.

(3) Review. AG-281.

Performance Standards

Pilots shall maintain effective NVG scan, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate understanding of NVG considerations WRT weapons employment, use proper gun procedures and commands to direct aerial gunnery, demonstrate understanding of weapons parameters, demonstrate proper response to weapon malfunctions, demonstrate proper understanding of aircraft maneuvers in response to threat (demonstrates understanding of

briefed ROE), demonstrate understanding of weapons conditions, fly weapons delivery profile IAW briefed parameters, demonstrate understanding of gun control within briefed fields of fire and sectors of fire.

Prerequisite. AG-281.

Ordnance. 500 rounds of .50 cal, expendables and others as available.

External Syllabus Support. AG gunnery range.

4. Electronic Warfare (EW)

a. Purpose. To introduce and develop proficiency in using Aircraft Survivability Equipment (ASE) and the employment of Electronic Warfare (EW) principles.

b. General

(1) The PUI shall use an EW range or threat emitter for EW-331.

(2) Refer to NWP 3-22.5-CH46E and the NATOPS Manual for electronic warfare equipment operating procedures.

(3) Prerequisite

(a) TERF qualified.

(b) All initial flights require a WTI or DMI.

c. Crew Requirement. P/P/CC/AO.

d. Academic Training

(1) Review APR-39, ALE-39, AAR-47, and ALQ-157 operating procedures paragraphs of the NWP 3-22.5-CH46E.

(2) Review APR-39, ALE-39, AAR-47, and ALQ-157 operating procedures paragraphs in the NATOPS.

(3) Complete the EW academic classes listed in the MAWTS-1 Course Catalog.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

SEW-330 2.0 C S/A

Goal. Demonstrate an understanding of the following:

(1) Operation of all onboard ASE.

(2) Strengths and weaknesses of onboard ASE versus AAA, IR SAMs, and RADAR SAMs.

(3) Tactics vs AAA, IR SAMs, and RADAR SAMs.

Requirement

(1) Discuss

(a) Operation of the ALE-39, APR-39, ALQ-157 and AAR-47.

(b) Strengths and weaknesses of each ASE system versus AAA, IR SAMs, and RADAR SAMs.

(c) CRM as it applies to the use of onboard ASE.

(d) Tactics against AAA, IR SAMs, and RADAR SAMs.

(e) Tactical expendables.

(f) Various threat signatures with emphasis on threat recognition.

(2) Introduce

(a) Use of all onboard ASE.

(b) EW tactics against AAA, IR SAMs, and RADAR SAMs.

(3) Review. None.

Performance Standards

Pilots shall demonstrate proper operation of ASE, understanding and interpretation of APR indications, ability to break lock when tracked, effective flight leadership and maneuvering in response to threat, and proper ASE employment with regard to threat.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/APT, operable TEN and ASE.

EW-331 1.5 C 1 CH-46E A

Goal. Demonstrate an understanding of the following:

(1) Operation of all onboard ASE.

(2) Strengths and weaknesses of onboard ASE versus AAA, IR SAMs, and RADAR SAMs.

(3) Tactics versus AAA, IR SAMs, and RADAR SAMs.

Requirement

(1) Discuss

(a) Operations of the ALE-39, APR-39, ALQ-157, and AAR-47.

(b) Strengths and weaknesses of each ASE system versus AAA, IR SAMs, and RADAR SAMs.

(c) CRM as it applies to the use of onboard ASE.

(d) Tactics against AAA, IR SAMs, and RADAR SAMs.

(e) Tactical expendables.

(2) Introduce

(a) Use of all onboard ASE.

(b) Tactics against AAA, IR SAMs, and RADAR SAMs.

(3) Review. EW-330.

Performance Standards

Pilots shall demonstrate proper operation of ASE, understanding and interpretation of APR indications, ability to break lock when tracked, effective flight leadership and maneuvering in response to threat, and proper ASE employment with regard to threat.

Prerequisite. None.

Ordnance. 40 chaff, 20 flares.

External Syllabus Support. EW range, EW emitter, smoke grenades or pyrotechnics.

5. Defensive Measures (DM)

a. Purpose. To develop proficiency in tactics and aerial DM used to evade enemy ground-to-air threats.

b. General

(1) Conduct DM-341 against a threat emitter (e.g., SA-8, ZSU 23-4, etc.) and shall use ground based threat simulation (e.g., smokey SAMs, hand-held pyrotechnics, etc.).

(2) After completion of DM-341, DM-441 and DM-442, the PUI is DM Qualified.

(3) Aircrews shall not conduct DM training unless the following requirements are met:

(a) A DMI is present in the cockpit for all initial/Refresher flights.

(b) The flight lead must be DM qualified and specifically brief all applicable DM training rules per the MAWTS-1 Helicopter DM Guide.

(4) .50 caliber machine guns should be mounted for all DM flights.

(5) Prerequisites

(a) TERF Qualified.

(b) FORM-231 and EW-331.

c. Crew Requirement. P/P/CC/AO.

d. Academic Training

(1) Review applicable chapters of the NWP 3-22.5-CH46E for electronic warfare, ASE, and formation maneuvering.

(2) Review appropriate chapters in the CH-46E NATOPS.

(3) Complete the DM academic classes listed in the MAWTS-1 Course Catalog.

(4) Complete Tactical CRM Considerations, Countering the Fixed Wing Threat, Introduction to Helicopter Air Combat Maneuvering, Helo ASE, and Countering the Rotary Wing Threat in the MAWTS-1 Academic Support Package.

(5) Review the MAWTS-1 Helicopter DM Guide.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

SDM-340 2.0 C S/A

Goal. Introduce multi-aircraft DM against a ground threat.

Requirement

(1) Discuss

(a) CRM/inter-flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Situational awareness.

(e) Use of ALE-39, APR-39, ALQ-157, and AAR-47.

(f) Tactical formation maneuvering.

(g) Use of RADAR horizons, RADAR masking, maneuver and chaff to defeat threat RADAR systems.

(h) Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.

(2) Introduce

(a) Section/division maneuvering against surface to air missile and RADAR threat systems on an EW range.

(b) Threat avoidance maneuvers and/or tactics to counter threat systems.

(c) Appropriate evasive maneuvers when engaged by a ground based threat.

(3) Review. SFORM-230 and SEW-330.

Performance Standards

Pilots shall demonstrate ability to break lock when tracked, maintain SA of wingman prior to and through evasive maneuvering, demonstrate effective flight leadership and maneuvering in response to threat, proper ASE employment with regard to threat, meet learning objectives as established by MAWTS-1 DM Guide.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/APT/operable TEN and ASE.

DM-341 1.5 C,R 2 CH-46E A

Goal. Introduce multi-aircraft DM against a ground threat.

Requirement

(1) Discuss

(a) CRM/inter-flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Situational awareness.

(e) Use of ALE-39, APR-39, ALQ-157, and AAR-47.

(f) Tactical formation maneuvering.

(g) Use of RADAR horizons, RADAR masking, maneuver and chaff to defeat threat RADAR systems.

(h) Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.

(i) Inter/intra cockpit communications.

(2) Introduce

(a) Section/division DM against surface to air missile and RADAR threat systems on an EW range.

(b) Threat avoidance maneuvers and/or tactics to counter threat systems.

(c) Appropriate evasive maneuvers when engaged by a ground based threat.

(3) Review. FORM-231, EW-331, DM-340.

Performance Standards

Pilots shall demonstrate ability to break lock when tracked, maintain SA of wingman prior to and through

evasive maneuvering, demonstrate effective flight leadership and maneuvering in response to threat, demonstrate proper ASE employment with regard to threat.

Prerequisite. EW-331.

Ordnance. 40 chaff, 20 flares, 2 smoke grenades or pyrotechnics.

External Syllabus Support. EW range and emitter.

6. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in MAT.

b. Crew Requirement. P/P/CC.

c. Academic Training. Review appropriate chapters in the CH-46E NATOPS Manual for high altitude and mountainous terrain flying.

d. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

SMAT-350 2.0 C S/A

Goal. Conduct MAT.

Requirement

(1) Discuss

(a) CRM in MAT.

(b) Emergencies in mountainous terrain.

(c) Wind and weather effects.

(d) High altitude operations.

(e) Slope landings.

(f) Pinnacle landings.

(2) Introduce

(a) Mountainous area operations.

(b) Pinnacle landings.

(c) Slope landings.

(d) Landings and operations in valleys and canyons.

(e) Crosswind landings.

(f) Max gross operations.

(g) Waveoff.

(3) Review. SCAL-210.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 1/2 rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase, and demonstrate effective CRM.

Prerequisite. SCAL-210.

Ordnance. None.

External Syllabus Support. Area that supports MAT.

MAT-351 1.5 C,R 1 CH-46E/WST A/S

Goal. Conduct MAT.

Requirement

(1) Discuss

(a) CRM in MAT.

(b) Emergencies in mountainous terrain.

(c) Wind and weather effects.

(d) High altitude operations.

(e) Slope landings.

(f) Pinnacle landings.

(2) Introduce

(a) Mountainous area operations.

(b) Pinnacle landings.

(c) Slope landings.

(d) Landings and operations in valleys and canyons.

(e) Crosswind landings.

(3) Review. CAL-211.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 1/2 rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase, and demonstrate effective CRM.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. Area that supports MAT.

7. Helicopter Insertion/Extraction Techniques (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, aerial observer, HRST master, and HRST safety observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

(2) ICS cranials and gunner's belts are required for HRST.

(3) CRM as applicable to HIE operations.

(4) Prerequisite. Aircrew must be NSQ (appropriate light level) for flights conducted on NVGs.

(5) External Syllabus Support. HRST master and safety observer.

c. Crew Requirements

(1) HIE-361. P/P/CC.

(2) HIE-362. P/P/CC/AO.

d. Academic Training

(1) Review NWP 3-22.5-CH46E and FM 7-40.

(2) Complete the HIE academic classes listed in the MAWTS-1 Course Catalog.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/2 Flights, 2.0 Hours).

SHIE-360 2.0 C S/A

Goal. Introduce fastrope, SPIE rig, paraops, helocast, and rescue hoist ops.

Requirement

(1) Discuss

(a) HIGE/HOGE requirements.

(b) Voice communication/standard terminology.

(c) Current Force Order/Wing SOP.

(d) Emergency procedures.

(e) Tactical considerations for various HIE techniques.

(f) Fastrope, SPIE rig, paraops, helocast, and rescue hoist ops procedures.

(2) Introduce

(a) Skills involved for holding an extended high hover.

(b) Troop insertion and extraction via fastrope, SPIE rig, paraops, helocast, and rescue hoist ops.

(3) Review. SEXT-220.

Performance Standards

Pilots shall execute HIE IAW local SOPs, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, utilize solid instrument scan, demonstrate proper CRM/ voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/APT.

HIE-361 1.0 C,R 1 CH-46E A

Goal. Conduct fastrope and rappel procedures.

Requirement

(1) Discuss

(a) HIGE/HOGE requirements.

(b) CRM. Pilots, crew chief, HRST master and HRST safety observer brief together.

(c) Voice communication/standard terminology.

(d) ICS failure/hand and arm signals.

(e) Current Force Order/Wing SOP.

(f) Obstacle clearance/waveoff.

(g) Rope specific emergency procedures.

(h) Tactical considerations for fastrope/rappel operations.

(2) Introduce

(a) Preflight of fastrope frame/rappel rigging.

(b) Skills involved for holding an extended high hover.

(c) Troop insertion via fastrope/rappelling.

(3) Review. SHIE-360.

Performance Standards

Pilots shall demonstrate ability to insert ropers within 10 feet of intended insertion point, execute HIE IAW local SOPs, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, utilize solid instrument scan, demonstrate proper crew resource management/voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

Prerequisite. CAL-211, EXT-221.

Ordnance. None.

External Syllabus Support. Applicable HIE support equipment.

HIE-362 1.0 C 1 CH-46E A N NS

Goal. Introduce and develop proficiency in NVG fastrope/rappel.

Requirement

(1) Discuss

(a) CRM.

(b) NVG considerations during NVG HIE operations.

(c) Emergency procedures during NVG HIE operations.

(2) Introduce. NVG fastrope/rappel procedures.

(3) Review. HIE-361.

Performance Standards

Pilots shall demonstrate ability to insert ropers within 10 feet of intended insertion point, execute HIE IAW local SOPs, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, maintain effective NVG scan, utilize solid instrument scan, demonstrate proper CRM/voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended high hover, demonstrate understanding of HOGE requirements.

Prerequisite. HIE-361, EXT-392.

Ordnance. None.

External Syllabus Support. Applicable HIE support equipment.

8. Tactics (Low and Medium Threat) (TAC)

a. Purpose. To introduce and develop proficiency in tactical planning, briefing and execution of assault support operations in the following mission areas in a low and medium threat environment. Use MCCRES Volume III, Section A standards.

(1) Helicopter Assault Operations (MPS 3A.4).

(2) Noncombatant Evacuation Operations (NEO) (MPS 3A.7).

(3) Raid (MPS 3A.8).

(4) Security/Reinforcement (MPS 3A.9).

(5) Reconnaissance Patrol/Reaction Force Operations (MPS 3A.10).

(6) Medical Evacuation (MPS 3A.1).

(7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) (MPS 3A.12).

b. General

(1) Utilizing a low to medium threat scenario, the PUI should assist in planning and briefing the mission. The AMC/flight leader should delegate planning and briefing responsibilities to PUIs.

(2) Squadron ordnance should mount .50 caliber machine guns for all tactical flights.

(3) Pilots shall discuss CRM as applicable to each event.

c. Crew Requirement

(1) TAC-371. P/P/CC/AO.

(2) STAC-373. A flight leader should instruct initial event for PUI.

(3) TAC-374. P/P/CC/AG.

d. Academic Training

(1) PUI must complete the following classes from the MAWTS-1 ASP prior to flying the TAC-371:

(a) "Tactical Recovery of Aircraft and Personnel (TRAP)."

(b) "Escort Tactics."

(c) "Countering The Rotary-Wing Threat."

(d) "Assault Support Mission Planning."

(e) "Tactical Briefing and Debriefing."

(f) "TACC."

(g) "DASC."

(h) "Objective Area Planning."

(i) "Tactics In The Night Environment."

(j) "Countering The Surface To Air Threat" (Classified ASP).

(2) Review appropriate chapters of the NWP 3-22.5-CH46E.

e. Simulator Event and Flight Training. (2 Events, 4.0 Hours/4 Flights, 6.0 Hours).

STAC-370 2.0 C S/A

Goal. Conduct day or NVG assault support operation in a low threat environment in accordance with MCCRES Volume III, Section A.

Requirement

(1) Discuss

(a) Tactical planning, briefing, and execution.

(b) Use of onboard ASE during the mission.

(c) CRM during the ingress, objective area, and egress phases of the mission.

(d) Rules of engagement as they apply to the mission.

(e) Tactics used in a low threat environment.

(f) Use of onboard navigation systems.

(g) NVG considerations with multiple aircraft aerial gunnery.

(2) Introduce

(a) Tactical planning, briefing, execution, and use of precision navigation systems.

(b) PUI will assist in planning and conducting the tactical brief.

(c) Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the NWP 3-22.5-CH46E.

(d) Radio procedures and discipline consistent with EMCON conditions.

(e) DASC control.

(f) Approach and retirement routes.

(g) Air control points.

(h) Escort tactics.

(3) Review. SEW-330, EW-331.

Performance Standards

Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisite. SEW-330.

Ordnance. None.

External Syllabus Support. WST/APT, operable TEN and ASE.

TAC-371 1.5 C 2 OR MORE CH-46E A

Goal. Conduct an assault support operation in a low threat environment IAW MCCRES Volume III, Section A MPS 3A.4.

Requirement

(1) Discuss

(a) Tactical planning, briefing, and execution.

(b) Use of onboard ASE during the mission.

(c) CRM during the ingress, objective area, and egress phases of the mission.

(d) Rules of engagement as they apply to the mission.

(e) Tactics used in a low threat environment.

(f) Use of onboard navigation systems.

(2) Introduce

(a) Tactical planning, briefing, execution, and use of precision navigation systems.

(b) PUI will assist in planning and conducting the tactical brief.

(c) Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the NWP 3-22.5-CH46E.

(d) Radio procedures and discipline consistent with EMCON conditions.

(e) DASC control.

(f) Approach and retirement routes.

(g) Air control points.

(h) Escort tactics.

(3) Review. EW-331.

Performance Standards

Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. CAL-212, SEW-330, and TERFQ.

Ordnance. Optional.

External Syllabus Support. Authorized TERF area, CAL site, (live fire range preferred).

TAC-372 1.5 C 2 OR MORE CH-46E A N NS

Goal. Conduct an NVG assault support operation in a low threat environment IAW MCCRES Volume III, Section A, MPS 3A.4.

Requirement

(1) Discuss

(a) Tactical planning, briefing, and execution.

(b) Use of onboard ASE during the mission.

(c) CRM during the ingress, objective area, and egress phases of the mission.

(d) Rules of engagement as they apply to the mission.

(e) Tactics used in a low threat environment.

(f) Use of precision navigation systems.

(g) Ordnance effects on NVGs.

(h) Laser aiming devices.

(2) Introduce

(a) Tactical planning, briefing, execution, and use of onboard navigation systems.

(b) PUI will assist in planning and conducting the tactical brief.

(c) Tactical conduct of assigned tasks from the mission statement, emphasizing tactical formations and approaches as contained in the NWP 3-22.5-CH46E.

(d) Radio procedures and discipline consistent with EMCON conditions.

(e) DASC control.

(f) Approach and retirement routes.

(g) Air control points.

(h) Escort tactics.

(3) Review. EW-331.

Performance Standards

Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of NVG considerations with multiple aircraft aerial gunnery, demonstrate proper understanding of Laser employment, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. TAC-371, NSQ for appropriate light level (or NSI with non-NSQ pilot).

Ordnance. Optional.

External Syllabus Support. Authorized TERF area, CAL site, (live fire range preferred).

STAC-373 2.0 C S/A N NS

Goal. Conduct a day or NVG assault support operation in a medium threat environment emphasizing MCCRES standards.

Requirement

(1) Discuss

(a) CRM during an assault support mission.

(b) Flight countertactics for air and ground threats.

(c) ASE utilization.

(d) Escort considerations.

(e) Fire support considerations and control measures.

(f) Control and terminology for onboard defensive weapons.

(g) EMCON procedures.

(h) NBC considerations.

(i) TERF considerations.

(2) Introduce

(a) Mission planning using a preplanned scenario and mission.

(b) Tactical formations and maneuvers.

(c) Navigation time and distance checks to meet a planned L-Hour.

(d) Multi-plane aerial gunnery in an objective area/LZ, if possible.

Performance Standards

Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of NVG considerations with multiple aircraft aerial gunnery, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisite. STAC-370.

Ordnance. None.

External Syllabus Support. WST/APT/operable TEN and ASE.

TAC-374 1.5 C, R 2 OR MORE CH-46E A

Goal. Conduct an assault support mission in a medium threat environment emphasizing MCCRES standards.

Requirement

(1) Discuss

(a) CRM during an assault support mission.

(b) Flight countertactics for air and ground threats.

(c) ASE utilization.

(d) Escort considerations.

(e) Fire support considerations and control measures.

(f) Control and terminology for onboard defensive weapons.

(g) EMCON procedures.

(h) NBC considerations.

(i) TERF considerations.

(2) Introduce

(a) Mission planning using a preplanned scenario and mission.

(b) Tactical formations and maneuvers.

(c) Navigation time and distance checks to meet a planned L-Hour.

(d) Multi-plane aerial gunnery in an objective area/LZ, if possible.

(e) Escort aircraft utilization, if available.

Performance Standards

Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate situational awareness of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, demonstrate proper understanding of secure and

active communications, demonstrate understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. TAC-371.

Ordnance. 20 chaff, 40 flares, .50 cal optional.

External Syllabus Support. TERF area, CAL site, (live fire, EW range preferred).

TAC-375 1.5 C,R 2 OR MORE CH-46E A N NS

Goal. Conduct an assault support mission in a medium threat environment on NVGs IAW MCCRES Volume III, Section A, MPS 3A.16 Night Operations.

Requirement

(1) Discuss

(a) CRM conducting a NVG mission.

(b) Escort considerations at night.

(c) Fire support considerations at night.

(d) NVG mission briefing.

(e) NVG considerations during tactical missions.

(f) Precision navigation systems.

(g) ASE utilization for night missions.

(h) NBC considerations.

(i) TERF considerations.

(2) Introduce

(a) Tactical assault support mission at night using NVGs.

(b) Escort aircraft utilization, if available.

(c) Multi-aircraft NVG aerial gunnery in an objective area if possible.

Performance Standards

Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, proper use of tactical formations, demonstrate SA of other aircraft through all phases of flight, flight leadership control, demonstrate proper understanding of NVG considerations with multiple aircraft aerial gunnery, proper understanding of laser employment, proper understanding of C4I utilization to facilitate execution and information flow, demonstrate

appropriate respect for threat from planning through execution, understanding of aircraft maneuver with regard to threat response in concert with proper aerial gunnery employment, proper understanding of escort considerations, proper understanding of secure and active communications, understanding of FSCM utilization, and understanding of contingency considerations.

Prerequisites. TAC-372.

Ordnance. 20 chaff, 40 flares, .50 cal optional.

External Syllabus Support. TERF area, CAL site, (live fire EW range preferred).

10. Nuclear, Biological, and Chemical (NBC)

a. Purpose. To develop proficiency with the AR-5 protective assembly during normal and tactical flight operations to include while wearing NVGs.

b. General

(1) When the event is conducted in the simulator both pilots should be masked. Only one pilot at a time shall be masked in the aircraft.

(2) CRM applicable to NBC operations.

c. Crew Requirement. Simulator: PUI/PUI. Aircraft: P/P/CC.

d. Academic Training

(1) Read Chapters 7, 22, 23, and Appendix C of NWP 3-22.5-CH46E.

(2) Read the appropriate section in the CH-46E NATOPS.

(3) Complete "NBC Threat" in the classified MAWTS-1 Academic Support Package.

e. Simulator Training. (1 Event, 2.0 Hours).

SNBC-380 2.0 C,R S/A NS

Goal. Develop flight skills in a simulated NBC environment. Conduct NVG flight operations in a simulated NBC environment.

Requirement

(1) Discuss

(a) Aircrew protective ensemble.

(b) Nuclear effects to aircraft and aircrew.

(c) Chemical and Biological agents, their effects and aircrew protective measures.

(d) Decontamination considerations.

(e) CRM in an NBC environment, to include emergency procedures.

(f) Operational capabilities and limitations of protective masks.

(g) Physiological limitations and fatigue factors imposed by NBC protective equipment.

(h) Heliborne operations in a NBC environment.

(i) NVG operations in a NBC environment.

(j) NVG failures.

(k) Operational capabilities, limitations and compatibility of the AR-5 and NVGs.

(l) Emergency egress and ditching considerations.

(2) Demonstrate

(a) Donning, adjustments, and doffing of the AR-5.

(b) Donning, adjustments and doffing of the AR-5 with NVGs.

(3) Introduce

(a) Ground operations.

(b) Airfield pattern operations.

(c) CALs.

(4) Review. None.

Performance Standards

Pilots shall demonstrate ability to perform all ground operations with AR-5, demonstrate ability to safely perform flight maneuvers with AR-5, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone, land within 2 rotors of intended point of landing, maintain effective NVG scan, and utilize solid instrument scan.

Prerequisite. SCAL-210.

Ordnance. None.

External Syllabus Support. NVG WST/APT.

11. External Cargo Operations (EXT)

a. Purpose. To conduct TERF and NVG external cargo operations.

b. General. CRM applicable to external cargo operations.

c. Crew Requirements. P/P/CC/AO. TERFI required for initial EXT-391. NSI required for initial/Refresher SEXT-390, EXT-392.

d. Ground/Academic Training. Read appropriate chapters of the NATOPS

Manual, appropriate paragraphs of the NWP 3-22.5-CH46E, and appropriate chapters of FMF RP 5-31, Multiservice Helicopter Air Transport Manual.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/1 Flight, 1.5 Hours).

SEXT-390 2.0 C S

Goal. To conduct external operations in the TERF and NVG environment.

Requirement

(1) Discuss

(a) Emergency procedures during TERF external operations.

(b) Limitations on power available, speed, maneuverability and altitude during TERF external operations.

(c) LZ lighting for NVG external operations.

(d) Common terminology for NVG external operations.

(e) Aircraft and NVG emergencies.

(2) Introduce

(a) Fly a TERF route with a minimum of 4 checkpoints in the contour profile while carrying an external load.

(b) External load operations to a confined area while using NVGs in an environment. Complete a minimum of 5 hookup/drops.

(3) Review. SEXT-220, EXT-221, TERF-241, and TERF-242.

Performance Standards

Pilot shall: TERF Externals (Day)
Properly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/descent rates, fly route within 50 ft and 10 kts of briefed altitude and airspeed, utilize proper CRM, maintain SA of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of load computation and HIGE/HOGE requirements, remain oriented on route within 200 meters, ensure effective CRM for navigation and obstacle clearance, demonstrate aircraft control in all phases of TERF regime, demonstrate effective cockpit management for precision navigation, utilize proper terminology and voice commands.

Pilot shall: NVG Externals
Properly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/descent rates, maintain briefed clearance below load, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, maintain effective NVG scan, utilize solid instrument scan, utilize proper CRM, demonstrate

proper voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of load computation and HIGE/HOGE requirements.

Prerequisites. SEXT-220, SNVG-250, STERF-240 and TERF-242.

Ordnance. None.

External Syllabus Support. External capable WST/APT.

EXT-391 1.5 C,R 1 CH-46E A

Goal. Conduct TERF external cargo operations to a confined area.

Requirement

(1) Discuss

(a) CRM during external evolutions.

(2) Introduce. External load operations to a confined area in a TERF environment. Complete a minimum of 5 hookup/drops.

(3) Review. SEXT-390.

Performance Standards

Pilots shall properly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/descent rates, fly route within 50 ft and 10 kts of briefed altitude and airspeed, utilize proper CRM, maintain SA of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of load computation and HIGE/HOGE requirements, remain oriented on route within 200 meters, ensure effective CRM for navigation and obstacle clearance, demonstrate aircraft control in all phases of TERF regime, demonstrate effective cockpit management for precision navigation, utilize proper terminology and voice commands.

Prerequisite. EXT-221 and TERF-242.

Ordnance. None.

External Syllabus Support. Single-point load (1,000-4,000 pounds preferred), HST, authorized TERF route.

EXT-392 1.5 C,R 1 CH-46E A N/NS

Goal. Conduct NVG external cargo operations to a confined area.

Requirement

(1) Discuss

(a) CRM during external operations.

(2) Introduce. External load operations to a confined area in an NVG environment. Complete a minimum of 5 hookup/drops.

(3) Review. SEXT-390, EXT-221, and NVG-251.

Performance Standards

Pilots shall properly respond to crew positioning calls, place load within 5 meters of intended point, recognize closure/ descent rates, maintain briefed clearance below load, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, maintain effective instrument and NVG scan, utilize proper CRM, demonstrate proper voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover, demonstrate understanding of load computation and HIGE/HOGE requirements.

Prerequisites. EXT-221, NVG-251.

Ordnance. None.

External Syllabus Support. Single-point load (1000-4000 pounds), HST, authorized TERF route.

134. FULL COMBAT QUALIFICATION PHASE

1. Tactics (High Threat Environment) (TAC)

a. Purpose. To develop proficiency in tactical planning, briefing and execution of assault support operations in the following mission areas in a high threat environment. Use MCCRES Volume III, Section A, Standards.

(1) Helicopter Assault Operation [MPS 3A.4].

(2) Noncombatant Evacuation Operation (NEO) [MPS 3A.7].

(3) Raid [MPS 3A.8].

(4) Security/Reinforcement [MPS 3A.9].

(5) Reconnaissance Patrol/Reaction Force Operation [3A.10].

(6) Medical Evacuation {MPS 3A.1].

(7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) [MPS 3A.12].

b. General

(1) Utilizing a high threat scenario, the PUI should assist in planning and briefing the mission. The AMC/flight leader should delegate planning and briefing responsibilities to PUIs.

(2) Squadron ordnance should mount .50 caliber machine guns for all tactical flights.

c. Crew Requirement

(1) STAC-400. A flight leader should instruct PUI.

(2) TAC-401/402. P/P/CC/AG.

d. Academic Training. "MAGTF Targeting and Fire Support Planning," "FARP/RGR," and "MAGTF FSCM's Coordination Procedures" lectures in the MAWTS-1 Academic Support Package.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/2 Flights, 3.0 Hours).

STAC-400 2.0 C S NS

Goal. Conduct a day or NVG assault support mission in a high threat environment using MCCRES standards; incorporate AG and EW concepts and skills.

Requirement

(1) Discuss

(a) CRM/crew comfort level.

(b) ASE operations and secure voice capability.

(c) NBC considerations.

(d) Planning based on METT.

(e) Aerial gunnery procedures.

(f) Helicopter Operation Planning Checklist and Mission Briefing Guide as contained in the NWP 3-22.5-CH46E.

(g) NVG considerations if flown at night.

(h) TERF considerations.

(2) PUI will plan and execute an assault support mission from a mission statement using MCCRES standards in a high threat environment. The PUI will fly the mission at TERF altitudes. Use escort aircraft (fixed-wing and/or helicopter) if available. Use aggressor aircraft if available. Incorporate the firing of .50 caliber machine guns.

(3) Introduce

(a) ASE and secure voice.

(b) Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

(4) Review. STAC-373.

Performance Standards

Pilots shall perform IAW MCO P3501.4A (MCCRES). Reference appropriate mission task within HMM and MEU(SOC) MPS (these standards are located on USMC doctrinal web page), remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA through all phases of flight of other aircraft within flight, flight leadership control, demonstrate proper understanding of C4I utilization to facilitate execution and information flow, demonstrate appropriate respect for threat from planning through execution, demonstrate understanding of aircraft maneuver WRT threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of escort considerations, proper understanding of secure and active communications, demonstrate proper understanding of NVG considerations with multiple aircraft aerial gunnery, understanding of FSCM utilization, demonstrate understanding of contingency considerations.

Prerequisites. None.

Ordnance. None.

External Syllabus Support. FMC WST/APT/TEN/ASE/Systems.

TAC-401 1.5 C 2 OR MORE ACFT A

Goal. Conduct an assault support mission in a high threat environment using MCCRES standards; incorporate AG and EW concepts and skills.

Requirement

(1) Discuss

(a) CRM/crew comfort level.

(b) ASE operations and secure voice capability.

(c) NBC considerations.

(d) Planning based on METT.

(e) Aerial gunnery procedures.

(f) Helicopter Operation Planning Checklist, and Mission Briefing Guide as contained in the NWP 3-22.5-CH46E.

(g) TERF considerations.

(2) PUI will assist in planning and execute an assault support mission from a mission statement using MCCRES standards in a high threat environment. The PUI will fly the mission at TERF altitudes. Use escort aircraft (fixed-wing and/or helicopter)

if available. Use aggressor aircraft if available. Incorporate the firing of .50 caliber machine guns.

(3) Introduce

(a) ASE and secure voice.

(b) Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

(4) Review. TAC-374.

Performance Standards

Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations and SA through all phases of flight of other aircraft within flight, flight leadership control, demonstrate appropriate respect for threat from planning through execution, understanding of aircraft maneuver WRT threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of event-driven versus time-driven mission execution, proper understanding of C4I utilization to facilitate execution and information flow, demonstrate proper understanding of escort considerations, proper understanding of secure and active communications, laser employment, proper understanding of contingency requirements, understanding of FSCM utilization and contingency considerations.

Prerequisites. TAC-374, DM-341, and STAC-400.

Ordnance. 20 chaff and 40 flares, 600 rounds .50 cal.

External Syllabus Support. (As available) Live fire (HE preferred), laser capable, FW/RW escort/CAS assets, EW Emitter, FW/RW adversaries, Smokey SAMs.

TAC-402 1.5 C,R 2 OR MORE ACFT A N NS

Goal. Conduct an assault support mission in a high threat environment on NVGs IAW MCCRES Volume III, Section A, MPS 3A.16 Night Operations.

Requirement

(1) In addition to the TAC-401 discussion items, discuss NVG (LLL) operational considerations.

(2) Execute a NVG mission similar to TAC-401. The PUI will fly the mission at TERF altitudes.

(3) Emphasis on navigation, timing, formation, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Performance Standards

Pilots shall remain oriented within 500 meters, arrive at LZ or coordinated checkpoint within 1 minute of briefed plan, land at intended point of landing within 50 meters, demonstrate proper employment of ASE, demonstrate proper use of tactical formations, demonstrate SA through all phases of flight of other aircraft within flight, flight leadership control, demonstrate appropriate respect for threat from planning through execution, understanding of aircraft maneuver WRT threat response in concert with proper aerial gunnery employment, demonstrate proper understanding of event-driven versus time-driven mission execution, proper understanding of C4I utilization to facilitate execution and information flow, proper understanding of escort considerations, proper understanding of secure and active communications, demonstrate proper understanding of NVG considerations with multiple aircraft aerial gunnery, proper understanding of laser employment and contingency requirements, demonstrate understanding of FSCM utilization, and understanding of contingency considerations.

Prerequisites. TAC-375 and TAC-401, NSQ for appropriate light level.

Ordnance. 20 chaff and 40 flares, 600 rounds .50 cal.

External Syllabus Support. (As available) Live fire (HE preferred), laser capable, FW/RW escort/CAS assets, EW Emitter, FW/RW adversaries, Smokey SAMs, C4I integration.

3. Nuclear, Biological, and Chemical (NBC)

a. Purpose. To develop proficiency with the AR-5 protective assembly during normal and tactical flight operations to include while wearing NVGs.

b. General

(1) For the safe execution of initial NBC flights, one pilot and one aircrewman shall remain unmasked. On subsequent flights all aircrew may remain masked. When using the AR-5 during NVG training flights, one pilot and one aircrewman shall remain unmasked due to the restricted field of view when using AN/AVS-6 with the AR-5.

(2) Initial NBC-431 training flight will be flown in HLL conditions. Proficiency flights may be flown in LLL.

(3) Aircrew shall be NSQ (HLL).

(4) NSI required for all initial NVG instructional flights.

(5) If flown during LLL conditions, both pilots shall be NSQ.

c. Crew Requirement. P/P/CC/AO.

d. Academic Training

(1) Read Chapters 7, 22, 23, and Appendix C of NWP 3-22.5-CH46E.

(2) Read the appropriate section in the CH-46E NATOPS.

(3) Complete "NBC Threat" in the classified MAWTS-1 Academic Support Package.

e. Flight Training. (2 Flights, 2.0 Hours).

NBC-430 1.0 C 1 CH-46E A

Goal. Conduct normal flight operations in a simulated NBC environment.

Requirement

(1) Discuss

(a) Aircrew protective ensemble.

(b) Nuclear effects to aircraft and aircrew.

(c) Chemical and Biological agents, their effects and aircrew protective measures.

(d) Decontamination considerations.

(e) CRM in an NBC environment to include emergency procedures.

(f) Operation capabilities and limitations of protective masks.

(g) Physiological limitations and fatigue factors imposed by NBC protective equipment.

(h) Heliborne operations in a NBC environment.

(2) Demonstrate. Donning, adjustments and doffing of the AR-5.

(3) Introduce (with AR-5 donned)

(a) Ground operations.

(b) Airfield pattern operations.

(c) CALs.

Performance Standards

Pilots shall demonstrate ability to perform all ground operations with AR-5, ability to safely perform flight maneuvers with AR-5, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone, and land within 2 rotors of intended point of landing.

Prerequisites. CAL-211 and SNBC-380.

Ordnance. None.

External Syllabus Support. CAL site.

NBC-431 1.0 C 1 CH-46E A N NS

Goal. Conduct NVG flight operations in a simulated NBC environment.

Requirement

(1) Discuss

(a) Heliborne operations at night in a NBC environment.

(b) NVG failures.

(c) Operational capabilities, limitations and compatibility of the AR-5 and NVGs.

(d) CRM in a NBC environment to include emergency procedures.

(2) Demonstrate. Donning, adjustments, and doffing of the AR-5 with NVGs.

(3) Introduce (with AR-5 and NVGs donned)

(a) Ground operations.

(b) Airfield pattern operations.

(c) CALs.

Performance Standards

Pilot shall maintain effective NVG scan, utilize solid instrument scan, demonstrate ability to safely perform flight maneuvers with AR-5, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on landing zone, and land within 2 rotors of intended point of landing.

Prerequisites. NVG-257 and NBC-430.

Ordnance. None.

External Syllabus Support. CAL site.

4. Defensive Measures (DM)

a. Purpose. To develop proficiency in tactics and aerial DM used to evade enemy air-to-air threats.

b. General

(1) After completion of DM-341, DM-441 and DM-442, the PUI is DM qualified.

(2) Aircrews shall not conduct DM training unless the following requirements are met:

(a) A DMI is present in the cockpit for all initial flights.

(b) The flight lead must be DM qualified and specifically brief all applicable DM training rules per the MAWTS-1 Helicopter DM Guide.

(c) The flight lead briefs any aggressor aircrew per T&R Manual, Administrative and covers training rules prior to each flight.

(3) For helicopter versus helicopter DM, the aggressor aircraft shall be a non-assault helicopter.

(4) .50 caliber machine guns should be mounted for all DM flights.

(5) Successful completion of DM 442 constitutes DM qualified. A qualification letter signed by the commanding officer stating the pilot is DMQ is required to be placed in the aircrew's APR and NATOPS jacket with appropriate logbook entry.

(6) Prerequisites

(a) TERF qualified.

(b) FORM-231 and DM-341.

c. Crew Requirement. P/P/CC/AO.

d. Academic Training

(1) Review applicable chapters of the NWP 3-22.5-CH46E for electronic warfare, ASE, ACM, and formation maneuvering.

(2) Review appropriate chapters in the CH-46E NATOPS.

(3) Complete the DM academic classes listed in the MAWTS-1 Course Catalog.

(4) Complete Tactical CRM Considerations, Countering the Fixed Wing Threat, Introduction to Helicopter Air Combat Maneuvering, Helo ASE, Ps/EM, and Countering the Rotary Wing Threat in the MAWTS-1 Academic Support Package.

(5) Discuss information in NWP 3-22.5-CH46E, Vol. II pertaining to CH-46 energy and maneuverability versus a specific aircraft.

(6) Review the MAWTS-1 Helicopter DM Guide.

e. Simulator Event and Flight Training. (1 Event, 2.0 Hours/2 Flights, 3.0 hours).

SDM-440 2.0 C S

Goal. Introduce section DM against a RW/FW aggressor.

Requirement

(1) Discuss

(a) CRM/inter-flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Common terminology.

(e) SA.

(f) DM training rules.

(g) Closure rate, radius of turn, and energy state.

(h) Use of ALE-39, APR-39, ALQ-157, and AAR-47.

(i) Use of .50 caliber machine gun.

(j) DM against RW/FW aggressor.

(k) Inter/intra cockpit communicating.

(2) Introduce. DM with a RW/FW aggressor per the MAWTS-1 Helicopter DM Guide.

(3) Review. Helicopter performance characteristics and NATOPS limitations.

Performance Standards

Pilots shall meet learning objectives as established by MAWTS-1 DM Guide, demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, demonstrate proper ASE employment WRT threat, execute IAW DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. FMC WST/APT/TEN/ASE/Systems.

DM-441 1.5 C,R 2 CH-46E A VS 1 RW AGGRESSOR

Goal. Introduce DM against a RW aggressor.

Requirement

(1) Discuss

(a) CRM/Inter-flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Common terminology.

(e) SA.

(f) DM training rules.

(g) Closure rate, radius of turn, and energy state.

(h) Use of ALE-39, APR-39, ALQ-157, and AAR-47.

(i) Use of .50 caliber machine gun.

(j) DM against RW aggressor.

(k) Inter/intra cockpit communicating.

(2) Introduce. Helicopter versus helicopter DM with an aggressor helicopter per the MAWTS-1 Helicopter DM Guide.

(3) Review. Helicopter performance characteristics and NATOPS limitations.

Performance Standards

Pilots shall meet learning objectives as established by MAWTS-1 DM Guide, demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, proper ASE employment WRT threat, execute IAW DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, utilize effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. NVG-257, SDM-440 and NBC-430.

Ordnance. 20 chaff and 40 flares.

External Syllabus Support. Range (TACTS optional), RW adversary (RW platform capable of fwd firing ordnance).

DM-442 1.5 C,R 2 CH-46E A VS 1 FW AGGRESSOR

Goal. Introduce DM against a FW aggressor.

Requirement

(1) Discuss

(a) CRM/inter flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Common terminology.

(e) SA.

(f) Closure rate, radius of turn, and energy state.

(g) FW weapons parameters and considerations.

(h) DM training rules.

(i) Use of .50 caliber machine gun.

(j) DM against FW aggressor.

(k) Inter/intra cockpit communicating.

(2) Introduce. Helicopter versus FW DM per the MAWTS-1 Helicopter DM Guide.

Performance Standards

Pilots shall meet learning objectives as established by MAWTS-1 DM Guide, demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, demonstrate proper ASE employment WRT threat, execute IAW DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. NVG-257 and NBC-430.

Ordnance. 20 flares.

External Syllabus Support. Range (TACTS optional), FW adversary.

6. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in mountainous terrain operations.

b. Crew Requirement

(1) MAT-450. P/P/CC.

(2) MAT-451. P/P/CC/AO.

c. Academic Training. Review appropriate chapters in the CH-46E NATOPS Manual for high altitude and mountainous terrain flying.

d. Flight Training. (2 Flights, 3.0 Hours).

MAT-450 1.5 C 2 CH-46E A

Goal. Introduce section aircraft operations in mountainous terrain.

Requirement

(1) Discuss

(a) Section maneuvering during mountain area operations.

(b) CAL selection in mountain areas.

(c) CAL techniques in mountain areas.

(2) Introduce

(a) Section operations in mountainous terrain.

(b) Section CALs in mountainous terrain.

(3) Review. CAL-212 and MAT-351.

Performance Standards

Pilots shall maintain SA of wingman requirements, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 1/2 rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, demonstrate proper use of cyclic trim in landing phase and effective CRM.

Prerequisite. CAL-212 and MAT-351.

Ordnance. None.

External Syllabus Support. Range that supports MAT.

MAT-451 1.5 C 1 CH-46E A N NS

Goal. Introduce NVG mountainous area operations.

Requirement

(1) Discuss

(a) CRM during mountainous terrain NVG operations.

(b) Visual illusions on NVGs in mountainous terrain.

(2) Introduce

(a) NVG mountainous terrain operations.

(b) NVG CALs in mountainous areas.

(3) Review. NVG-251.

Performance Standards

Pilots shall maintain effective NVG scan, utilize solid instrument scan, recognize proper closure with intended point of landing, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on zone, land within 1/2 rotor of intended point of landing, demonstrate proper understanding of mountainous terrain and environmental considerations, proper use of cyclic trim in landing phase and effective CRM.

Prerequisites. NVG-251 and MAT-351.

Ordnance. None.

External Syllabus Support. Range that supports MAT.

6. Helicopter Insertion/Extraction Techniques (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, aerial observer, HRST Master, and HRST Safety Observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

(2) The Jump Master is responsible for the safe and proper rigging of the aircraft for conduct of aerial delivery (paradrops and cargo drops). Pilots shall preflight aircraft rigging.

(3) ICS cranials and gunner's belts are required for Jump Master/Cast Master.

c. Crew Requirement

(1) HIE-460, 461(day), 462 and 463(day). P/P/CC.

(2) HIE-461(NVG) and 463(NVG). P/P/CC/AO.

d. Prerequisite. Aircrew must be NSQ (appropriate light level) for flights conducted on NVGs.

e. External Syllabus Support. HRST Master and Safety Observer.

f. Academic Training

(1) Review NWP 3-22.5-CH46E and FMFM 7-40.

(2) Complete the HIE academic classes listed in the MAWTS-1 Course Catalog.

g. Flight Training. (4 Flights, 4.0 Hours).

HIE-460 1.0 C 1 CH-46E A

Goal. Introduce SPIE rig operations.

Requirement

(1) Discuss

(a) HIGE/HOGE requirements.

(b) CRM. Pilots, crew chief, HRST Master and HRST Safety Observer brief together.

(c) Voice communication/standard terminology.

(d) ICS failures/hand and arm signals.

(e) Current Force Order/Wing SOP.

(f) Obstacle clearance.

(g) Emergency procedures.

(h) Tactical considerations for SPIE operations.

(i) SPIE extraction from water.

(2) Introduce

(a) Inspection of SPIE Rig.

(b) Skills involved for holding extended hover.

(c) Troop insertion/extraction via SPIE Rig.

Performance Standards

Pilots shall demonstrate ability to properly inspect aircraft rigging, ability to insert ropers within 10 ft of intended point of insertion, execute HIE IAW local SOPs, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize proper closure to insertion point, remain oriented on insertion point, demonstrate understanding of emergency procedures requirements, utilize solid instrument scan, demonstrate proper CRM and voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover and understanding of HOGE requirements.

Prerequisite. EXT-221.

Ordnance. None.

External Syllabus Support. HRST and Safety Observers.

HIE-461 1.0 C 1 CH-46E A (N)(NS)

Goal. Introduce day or NVG aerial delivery procedures.

Requirement

(1) Discuss

(a) CRM during aerial deliveries.

(b) Voice communication/standard terminology during aerial deliveries.

(c) Tactical considerations for aerial delivery of troops/cargo.

(d) Proper rigging and preflight of equipment to be inserted by aerial delivery.

1 Paradrop procedures.

2 Sensor drop procedures.

3 ICS procedures.

(e) Airspace coordination considerations.

(2) Introduce. Insertion of troops/cargo or sensors by aerial delivery.

Performance Standards

Pilots shall demonstrate ability to properly inspect aircraft rigging, execute HIE IAW local SOPs, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on insertion point, maintain effective instrument and NVG scan, demonstrate proper CRM and voice commands, maintain SA of obstacles.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. Certified DZ, Jumpmaster and Safety Observers.

HIE-462 1.0 C 1 CH-46E A

Goal. Introduce helocast/soft duck procedures.

Requirement

(1) Discuss

(a) CRM while performing helocast or soft duck over water.

(b) Proper rigging and preflight of equipment to be inserted via helocast and soft duck.

(c) Low altitude aircraft emergencies over water.

(d) Ditching/water landing.

(e) Salt encrustation/compressor stall.

(f) Helocast/soft duck delivery altitudes and airspeeds.

(g) Voice communications/standard terminology.

(h) Tactical considerations for helocast/soft duck operations.

(2) Introduce

(a) Insertion of troops and equipment by helocast or soft duck.

(b) Preflight of aircraft, troops and equipment for helocast or soft duck.

Performance Standards

Pilots shall demonstrate ability to properly inspect rigging, execute HIE IAW local SOPs, fly pattern within 5 ft and 5 kts of briefed altitude and airspeed, fly established pattern checkpoints, remain oriented on insertion point, demonstrate proper CRM and voice commands, maintain SA of water and other obstacles.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. Cast Master and Safety Observers.

HIE-463 1.0 C 1 CH-46E A (N)(NS)

Goal. Introduce hoist and rescue procedures for overland/over water operations.

Requirement

(1) Discuss

(a) CRM during rescue operations.

(b) Considerations during rescue operations.

(c) Emergency procedures during rescue operations.

(2) Review

(a) Preflight of appropriate HIE equipment.

(b) Internal/external hoisting operations.

Performance Standards

Pilots shall properly respond to crew positioning calls, exercise hoist operations within 2 meters of intended point, recognize closure/descent rates, maintain briefed clearance below load, fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, utilize proper CRM, demonstrate proper voice commands, maintain SA of obstacle clearance, demonstrate ability to hold extended hover and understanding of load computation and HIGE/HOGE requirements.

Prerequisite. EXT-221.

Ordnance. None.

External Syllabus Support. Operational jungle penetrator or SAR basket (as available).

7. Carrier Qualification (CQ)

a. Purpose. To train/refresh the PUI in night unaided shipboard landings.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) CQ Requirements

(a) Requirements for initial/Refresher/delinquent qualification are:

- five day CQs.
- five NVG CQs.
- five night unaided CQs.

(b) Pilots previously night CQ and proficient per paragraph 2(a) shall complete the following to maintain proficiency:

- two day CQs.
- two NVG CQs. (Note: CQ-301 chains CQ-300 and CQ-491).
- two night unaided CQs. (Note: CQ-491 chains CQ-300).

(3) Pilot is CQ on completion of CQ-300, CQ-301 and CQ-491.

(4) Pilots are authorized to carry passengers under all conditions when proficient in CQ-301 and CQ-491.

(5) Pilots shall discuss CRM as applicable to each event.

c. Crew Requirement. CQ-491. P/P/CC.

d. Academic Training

(1) Review appropriate chapters of NWP 42 and the LPH/LHA/LHD NATOPS Manual.

(2) Review Ships Facilities Resume.

f. Flight Training. (1 Flight, 1.0 Hour).

CQ-491 1.0 C 1 CH-46E A N

Goal. Conduct night unaided CQ.

(1) Discuss

(a) CRM during shipboard landings.

(b) Communications used during shipboard landings.

(c) LSE signals.

(d) Water landings/ditching.

(e) Aircraft lighting used during shipboard landings.

(f) Rotor engagement/disengagement.

(g) Launch/Recovery wind envelopes.

(h) Transition from instrument to NVG scan.

(i) Basic instrument scan.

Performance Standards

Pilots shall fly 300 ft/80 kt pattern within 25 ft and 10 kts, fly established CQ pattern demonstrating understanding of proper upwind, crosswind and interval parameters, maintain proper orientation to LSE, respond promptly and safely to altitude and drift calls from aircrew, remain oriented on assigned landing spot, land within 1 meter of intended point of landing, maintain effective NVG scan, utilize solid instrument scan, recognize proper closure with intended point of landing, demonstrate proper shipboard communications and aircraft lighting.

Prerequisite. CQ-292 and CQ-300.

Ordnance. None.

External Syllabus Support. CQ capable ship.

140. INSTRUCTOR TRAINING

1. Instructor Under Training (IUT)

a. Purpose. To develop qualified instructor pilots using a standardized flight training program.

b. General

(a) The IUT should fly all sorties with an experienced IP. The IP for NVG-513 shall be an NSI.

(b) The IUT may find all maneuver descriptions in the FRS Standardization Manual, NATOPS Flight Manual, and MAWTS-1 Course Catalog.

(c) Pilots shall discuss CRM as applicable to each event.

c. Crew Requirement. IP/IUT/CC (AO if NVGs are used).

d. Ground Training. Instructors will complete the appropriate portion of the ISD program prior to qualification.

e. Flight Training. (13 Flights, 21.0 Hours).

FAM-500 1.5 E 1 CH-46E A

Goal. Introduce techniques of instruction.

Requirement

(1) Discuss

(a) CRM.

(b) Course rules.

(2) Introduce

(a) Course rules.

(b) Techniques of instruction.

(c) All FAM stage maneuvers.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all FAM Maneuvers IAW the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-501 1.5 E 1 CH-46E A/S

Goal. Introduce techniques of instruction.

Requirement

(1) Discuss

(a) CRM.

(b) Course rules.

(2) Introduce

(a) Course rules.

(b) Techniques of instruction.

(c) All familiarization stage maneuvers.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all FAM Maneuvers IAW the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

FAM-502 1.5 E 1 CH-46E/WST A/S N

Goal. Night instructional techniques introduction.

Requirement

(1) Discuss. CRM.

(2) Introduce

(a) Local area orientation.

(b) Night FAM stage maneuvers.

(3) Review

(a) All previously introduced maneuvers as necessary.

(b) Instructional techniques.

(c) Single engine landings.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all Night FAM Maneuvers IAW the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

INST-503 1.5 E 1 CH-46E/WST A/S

Goal. Introduce instrument instructional techniques.

Requirement

(1) Discuss. CRM.

(2) Introduce

(a) Basic instrument procedures.

(b) Basic instrument patterns (vertical S-l and Oscar patterns).

(3) Review any previously introduced maneuvers as necessary. Terminate flight with an instrument approach.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all INST Maneuvers IAW the FRS Standardization Manual and NATOPS Instrument Flight Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

INST-504 1.5 E 1 CH-46E/WST A/S

Goal. Continue instrument instructional techniques.

Requirement

(1) Discuss. CRM.

(2) Review

(a) IFR flight planning.

(b) Filing DD-175 and DD-l75-1.

(c) Airway procedures.

(d) Precision and non-precision instrument approaches.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all INST Maneuvers IAW the FRS Standardization Manual and NATOPS Instrument Flight Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

NAV-505 1.5 E 1 CH-46E A

Goal. Introduce navigation procedures instructional techniques.

Requirement

(1) Discuss. Navigation and identifying positions using charts and maps.

(2) Review

(a) CRM.

(b) Lost plane procedures.

(c) Time/distance checks.

(d) Distance information and map legend information.

(e) Use of jet logs and enroute navigational computer.

(f) Mountainous area landings.

(g) CALs.

(h) Power available.

(i) Techniques of instruction.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all NAV Procedures IAW the FRS Standardization Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

EXT-506 1.5 E 1 CH-46E A

Goal. Introduce external cargo procedures instructional techniques.

Requirement

(1) Discuss. CRM.

(2) Review

(a) External operations.

(b) Cargo hook procedures.

(c) Techniques of instruction.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all EXT Procedures IAW the FRS Standardization Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. HST, external load, pendant and hook.

CAL-507 1.5 E 1 CH-46E/WST A/S

Goal. Introduce CAL instructional techniques.

Requirement

(1) Discuss

(a) CRM.

(b) Zone brief.

(2) Review

(a) CALs.

(b) Power checks.

(c) Techniques of instruction.

(d) Masking/unmasking.

(e) Bunts/Rolls.

(f) Quick stop.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all CAL/TERF Procedures IAW the FRS Standardization Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. TERF area.

FORM-509 1.5 E 2 CH-46E A

Goal. Introduce formation flight instructional techniques.

Requirement

(1) Discuss

(a) CRM.

(b) Safety parameters.

(2) Review

(a) All formation maneuvers.

(b) Techniques of instruction.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all FORM Procedures IAW the FRS Standardization Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

IUT-511 3.0 E 1 CH-46E A

Goal. Instructor standardization check.

Requirement

(1) Discuss

(a) CRM.

(b) Safety parameters.

(2) Evaluate. All phases of instruction and techniques of instruction.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all procedures IAW the FRS Standardization Manual, CH-46E TAC Manual and NATOPS Manual.

Prerequisite. Appropriate FRS ISD lessons.

Ordnance. None.

External Syllabus Support. None.

NVG-513 1.5 E 1 CH-46E A N NS

Goal. Introduce initial NVG instructional techniques.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) NVG failures.

(d) Depth perception.

(e) Cockpit lighting.

(f) Emergency procedures.

(2) Evaluate. All phases and techniques of instruction to include the following:

(a) Taxi.

(b) Vertical takeoff.

(c) Vertical landing.

(d) Square patterns.

(e) Touch and go patterns.

Performance Standards

Pilot will conform to instructional techniques set forth by the FRS for all NVG procedures IAW the FRS Standardization Manual, MAWTS-1 NVD Manual and CH-46E TAC Manual.

Prerequisite. Appropriate FRS ISD lessons, completion of NVG NSFI Syllabus IAW MAWTS-1 Course Catalog.

Ordnance. None.

External Syllabus Support. None.

150. REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS (RQD)

1. RQD Overview

a. Purpose. To determine qualification for designation in specific flight skills, systems, knowledge, and flight leadership traits.

b. General. This section enables squadrons to document completion of flight leadership check rides.

(1) For RQD-600 the evaluating pilot shall be a designated NATOPS Evaluator. For RQD-601 the evaluating pilot shall be a designated Instrument Evaluator.

(2) Prerequisites. See OPNAVINST 3710.7, OPNAVINST 4790.2, and the CH-46E NATOPS Flight Manual.

c. Crew Requirements. P/P/CC/ (AO if NVGs are used).

d. Ground/Academic Training. N/A.

e. Simulator Event and Flight Training. Incorporated in the flight training. (14 Flights, 21 Hours).

RQD-600 1.5 E 1 CH-46E A/S (N)(NS)

Goal. Conduct annual NATOPS evaluation and evaluate utilization of all aspects of the CH-46E as a weapons system.

Requirement

(1) Discuss. All emergency procedures and Standardization Manual maneuvers.

(2) Introduce. None.

(3) Review. None.

Performance Standards

The performance expected by the evaluator in this flight shall

be commensurate with the experience of the pilot under evaluation.

Prerequisite. CCX-182.

Ordnance. None.

External Syllabus Support. WST/APT (If sim is utilized).

RQD-601 1.5 E 1 CH-46E S/A (N)

Goal. Conduct annual instrument evaluation and evaluate all phases of instrument flight to include precision and non-precision approaches, partial panel, and instrument holding.

Requirement

(1) Discuss. Instrument procedures IAW Instrument Flight Manual.

(2) Introduce. None.

(3) Review. None.

Performance Standards

Pilots shall demonstrate performance in handling instrument related emergencies to include unusual attitude recoveries.

Prerequisite. IAW OPNAV 3710.7x.

Ordnance. None.

External Syllabus Support. Instrument capable WST/APT.

2. Flight Leadership (FL)

a. Purpose. To demonstrate tactical skills in a flight leadership role.

b. General

(1) This section enables squadrons to document flight leadership workups and evaluations.

(2) For RQD-600, 604 and 605 the evaluating pilot shall be a designated NATOPS Instructor or ANI. For RQD-601 the evaluating pilot shall be a designated Instrument Evaluator.

(3) Instruction in a given flight leadership level can be provided by a pilot with that designation. The evaluation flight for a given flight leadership level shall be provided by a pilot at least one flight leadership level higher.

(4) Initial designation requires completion of all flight leadership events specific to a designation. Re-designation requires refly of senior flight leadership level event.

c. Crew Requirements. P/P/CC/(AO).

d. Ground/Academic Training. MAWTS-1 Assault Support Package.

e. Flight Training. (6 Flights, 9.0 Hours).

FL-602 1.5 C E 1 CH-46E/WST A/S

Goal. Conduct day HAC review. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

(1) Discuss. Aircraft commander duties and responsibilities.

(2) Introduce. None.

(3) Review. Flight maneuvers, aircraft systems.

Performance Standards

Pilots shall demonstrate satisfactory performance in basic pilot skills and CRM with emphasis on decision making.

Prerequisite. IAW NATOPS, Squadron SOP.

Ordnance. None.

External Syllabus Support. None.

FL-603 1.5 C E 1 CH-46E/WST) A/S N NS

Goal. Conduct night HAC review. Night and NVG. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

(1) Discuss. Aircraft commander duties and responsibilities.

(2) Introduce. None.

(3) Review. Flight maneuvers, aircraft systems.

Performance Standards

Pilots shall demonstrate satisfactory performance in basic night and NVG pilot skills and CRM with emphasis on decision making.

Prerequisite. IAW NATOPS, Squadron SOP, and NSQ.

Ordnance. None.

External Syllabus Support. None.

FL-604 1.5 C E 1 CH-46E A

Goal. Conduct day HAC check. Check will be conducted per the CH-46E NATOPS Flight Manual and OPNAVINST 3710.7 and include all practicable operations and procedures previously covered. Fly at (or simulate) high gross weight condition.

Requirement

(1) Discuss. Aircraft commander duties and responsibilities.

(2) Introduce. None.

(3) Review. Flight maneuvers, aircraft systems.

Performance Standards

Pilots shall demonstrate satisfactory performance in basic pilot skills and CRM with emphasis on decision making.

Prerequisite. IAW NATOPS, Squadron SOP, FL-602, and FL-603.

Ordnance. None.

External Syllabus Support. None.

FL-605 1.5 C E 1 CH-46E A N (NS)

Goal. Conduct night HAC check. Night and NVG. Emphasize emergency procedures. Fly at (or simulate) high gross weight condition.

Requirement

(1) Discuss. Aircraft commander duties and responsibilities.

(2) Introduce. None.

(3) Review. Flight maneuvers, aircraft systems.

Performance Standards

Pilots shall demonstrate satisfactory performance in basic night and NVG pilot skills and CRM with emphasis on decision making.

Prerequisite. IAW NATOPS, Squadron SOP, and FL-604.

Ordnance. None.

External Syllabus Support. None.

FL-606 1.5 C 2 CH-46E A

Goal. Conduct day section leader training.

Requirement. SLUI will plan, brief, lead, and debrief a day section tactical flight to include escort and fire support considerations.

Performance Standards

Pilots shall conduct this flight IAW the standards in T&R Manual, Administrative and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source

documents for planning. Flight shall include escorts (actual or notional).

Prerequisites. FL-604 and 605, TAC-371 or TAC-374.

Ordnance. As required.

External Syllabus Support. CAL sites, authorized TERF area.

FL-607 1.5 C 2 CH-46E A N NS

Goal. Conduct night section leader training.

Requirement. SLUI will plan, brief, lead, and debrief a night section tactical flight to include escort and fire support considerations.

Performance Standards

Pilots shall conduct this flight under the standards required in T&R Manual, Administrative and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-606 or TAC-372 or 375.

Ordnance. As required.

External Syllabus Support. Authorized TERF area, CAL site.

FL-608 1.5 C,R E 2 CH-46E A (N)(NS)

Goal. Section leader check or section leader review.

Requirement. SL or SLUI will plan, brief, lead, and debrief a day or night section tactical flight to include escort, fire support considerations and aerial gunnery.

Performance Standards

Pilots shall conduct this flight under the standards required in T&R Manual, Administrative and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-607.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

External Syllabus Support. Aerial gunnery range, EW range, authorized TERF area, CAL site.

FL-609 1.5 C 3 OR MORE CH-46E A

Goal. Conduct day division leader training.

Requirement. DLUI will plan, brief, lead, and debrief a day division tactical flight to include escort and fire support considerations.

Performance Standards

Pilots shall conduct this flight IAW T&R Manual, Administrative and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-608.

Ordnance. As required.

External Syllabus Support. Authorized TERF area, CAL site.

FL-610 1.5 C 3 OR MORE CH-46E A N NS

Goal. Conduct night division leader training.

Requirement. DLUI will plan, brief, lead, and debrief a day division tactical flight to include escort and fire support considerations.

Performance Standards

Pilots shall conduct this flight IAW T&R Manual, Administrative and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts (actual or notional).

Prerequisite. FL-609.

Ordnance. As required.

External Syllabus Support. Authorized TERF area, CAL site.

FL-611 1.5 C,R E 3 0R MORE CH-46E A (N) (NS)

Goal. Division leader check or division leader review.

Requirement. DLUI will plan, brief, lead, and debrief a day division tactical flight with fire support considerations and actual escorts.

Performance Standards

Pilots shall conduct this flight IAW T&R Manual, Administrative and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E

Volumes 1 and 2 Tactical Manuals as source documents for planning. Flight shall include escorts.

Prerequisite. FL-610.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

External Syllabus Support. Aerial gunnery range, EW range, authorized TERF area, CAL site, RW and/or FW escort.

FL-612 1.5 C,R E 5 OR MORE CH-46E A (N)(NS)

Goal. Flight leader check or flight leader review.

Requirement. FLUI or FL will plan, brief, lead, and debrief a multi-division tactical flight. Flight shall include fire support considerations and actual escorts.

Performance Standards

Pilots shall conduct this flight IAW T&R Manual, Administrative and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning. Demonstrate ability to plan, coordinate and control all supporting arms, escorts and agencies in meeting mission requirements.

Prerequisite. FL-611, and TAC-375.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

External Syllabus Support. Aerial gunnery range, EW range, authorized TERF area, CAL site, RW and/or FW escort.

FL-613 1.5 C,R E (+2 Div) (N) (NS)

Goal. Air mission commander check or review.

Requirement. AMCUI or AMC will plan, brief, lead, and debrief a multi-division tactical mission. AMCUI should be evaluated on ability to integrate six functions of Marine Aviation. Preferably executed from a C&C platform.

Performance Standards

Pilots shall conduct this flight IAW T&R Manual, Administrative and MCO 3501.4A, MCCRES. Use NWP 3-22.5-CH46E Volumes 1 and 2 Tactical Manuals as source documents for planning.

Prerequisite. FL-612, and TAC-402.

Ordnance. 200 rounds .50 cal per aircraft, 20 chaff and 40 flares.

External Syllabus Support. Aerial gunnery range, EW range, authorized TERF area, CAL site, RW and/or FW escort.

151. GRADUATE LEVEL COURSES

1. General. There are five graduate level courses that qualify instructors for specific portions of the T&R syllabus. These courses are as follows:

a. Weapons and Tactics Instructor (WTI).

b. Terrain Flight Instructor (TERFI).

c. Night Systems Familiarization Instructor (NSFI).

d. Night Systems Instructor (NSI).

e. Defensive Measures Instructor (DMI).

2. The current MAWTS-1 Course Catalog lists the above courses by training codes. There will be no refly factors for these instructor flights. T&R syllabus proficiency in stage is considered sufficient to maintain proficiency as an instructor.

152. SPECIAL TRAINING. The purpose of this section is for aircrew to develop proficiency in flight procedures and techniques involving special training requirements. Due to the special equipment and logistical support, facilities or supporting units required to conduct special training flights, squadrons may complete these flights as appropriate support becomes available and mission requirements dictate.

1. Arctic Weather Training (AWT)

a. Purpose. To teach the fundamentals of, and/or develop proficiency in any aspect of flying in cold weather with snow on the ground.

b. General

(1) Ambient air temperatures will normally be below 10 degrees Fahrenheit with snow on the ground. Pilots must note that cold dry conditions with blowing snow will significantly increase the difficulty of arctic weather flight.

(2) Aircrew shall be NSQ for all NVG flights.

c. Crew Requirements. P/P/CC/ (AO if NVGs are used).

d. Ground Training

(1) Environmental factors.

(2) Arctic weather survival.

(3) Arctic weather physiology/psychology.

e. Flight Training. (1 Flight, 2.0 Hours).

AWT-620	2.0	1 CH-46E A (N)(NS)

Goal. Introduce helicopter operations in a cold weather environment.

Requirement

(1) Discuss

(a) Cold dry conditions.

(b) Blowing snow.

(c) White-out conditions.

(d) Aircraft cold weather limitations.

(e) Aircraft anti-ice.

(f) Icing.

(2) Introduce. Snow landing techniques.

(3) Review. NATOPS Chapter 13.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing, demonstrate ability to perform no-hover landings.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. Snow on the ground.

2. Desert Operations (DES)

a. Purpose. To develop proficiency in aspects of flying in a dusty, high temperature, high density altitude desert environment.

b. Crew Requirement. P/P/CC (AO if NVGs are used).

c. Ground Training

(1) Environmental factors (weather, desert conditions).

(2) Desert weather survival.

(3) Desert weather physiology/psychology.

(4) Desert weather clothing and equipment.

d. Flight Training. (1 Flight, 2.0 Hours).

DES-630 2.0 1 CH-46E A (N)(NS)

Goal. Introduce helicopter operations in a desert environment.

Requirement

(1) Discuss

(a) High density altitude.

(b) Blowing sand.

(c) Brown-out conditions.

(d) Aircraft hot weather performance limitations.

(2) Introduce. Desert landing techniques.

(3) Review. NATOPS Chapter 13.

Performance Standards

Pilots shall fly pattern within 50 ft and 10 kts of briefed altitude and airspeed, fly established pattern checkpoints, recognize closure to landing point, remain oriented on zone, land within 2 rotors of intended point of landing, demonstrate ability to perform no-hover landings.

Prerequisites. CAL-211.

Ordnance. None.

External Syllabus Support. Desert environment.

3. CRM

a. Purpose. To conduct annual CRM training.

b. Crew Requirement. P/P.

c. Simulator Training. (1 Event, 2.0 Hours).

SCRM-640 2.0 C,R 1 CH-46E S/A

Goal. Practice/review CRM principles presented in the CH-46E CRM Training course while executing a simulated mission scenario.

Requirement

(1) Discuss

(a) Decision making.

(b) Assertiveness.

(c) Mission analysis.

(d) Communication.

(e) Leadership.

(f) Adaptability/flexibility.

(g) Situational awareness.

(2) Introduce. None.

(3) Review. None.

(4) Evaluate

(a) Decision making.

(b) Assertiveness.

(c) Mission analysis.

(d) Communication.

(e) Leadership.

(f) Adaptability/Flexibility.

(g) Situational Awareness.

(h) CRM during emergencies and system failures.

Performance Standards

Pilots shall demonstrate effective use of the CRM seven critical skills areas.

Prerequisite. Completion of the CH-46E CRM course.

Ordnance. None.

External Syllabus Support. WST/APT.

4. Water Landings (WTR)

a. Purpose. To develop water landings skills.

b. General. Pilots shall practice landings in fresh water.

c. Crew Requirements. P/P/CC.

d. Flight Training. (1 Flight, 1.0 Hour).

WTR-650 1.0 C,R 1 CH-46E A/S

Goal. Demonstrate the ability to conduct day water takeoffs and landings.

Requirement

(1) Discuss

(a) CRM requirements for water landings.

(b) Water landing checklist.

(c) Waterfall effect and salt encrustation.

(d) Rescue with the side door down procedures and limitations.

(e) Inadvertent HEFS deployment.

(f) Ditching.

(2) Introduce

(a) Water taxi.

(b) Vertical water takeoff.

(c) Vertical water landing.

(d) Running water takeoff.

(e) Running water landing.

(3) Review. Over-water rescue hoist operations.

Performance Standards

Pilots shall recognize and control closure and descent rates, perform vertical landing and takeoff, perform water taxi.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. Authorized fresh water landing area.

5. Air Combat Maneuvering (ACM)

a. Purpose. To introduce ACM in the simulator.

b. General. Conduct ACM with a section of helicopters against one or two RW/FW bandits.

c. Crew Requirements. P/P.

d. Academic Training

(1) Complete "Tactical CRM Considerations," "Countering the Fixed-Wing Threat," "Introduction to Helicopter Air Combat Maneuvering," "Helo ASE" and "Countering the Rotary-Wing Threat" in the MAWTS-1 Academic Support Package prior to conducting this simulator event.

(2) Read appropriate chapters in NWP 3-22.5-CH46E, Volume 1.

(3) Discuss information in NWP 3-22.5-CH46E, Volume 2 pertaining to CH-46 energy and maneuverability versus a specific aircraft threat.

e. Simulator Training. (1 Event, 2.0 Hours).

SACM-660 2.0 C,R S

Goal. Introduce helicopter ACM.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Lookout doctrine.

(d) Common terminology.

(e) Closure rate/radius of turn/energy state.

(f) Use of ALE-39/APR-39/ALQ-157/AAR-47.

(g) Use of .50 cal machine guns.

(2) Introduce. Helicopter ACM in a section versus RW/FW bandits per the MAWTS-1 Helicopter ACM Guide.

(3) Review. None.

Performance Standards

Pilots shall demonstrate effective flight leadership and maneuvering in response to threat, maintain SA of wingman prior to and through evasive maneuvering, demonstrate proper ASE employment WRT threat, execute IAW DM training rules and NATOPS limits, demonstrate effective threat evaluation, appropriate threat response, effective inter and intra cockpit communication, meet learning objectives as established by MAWTS-1 DM Guide, demonstrate understanding of mutual supportability, recognize closure rate, effectively utilize radius of turn, maintain energy state, utilize proper terminology, effective 360 degree lookout doctrine, demonstrate proper response to aircrew threat calls, proper utilization of onboard defensive systems, understanding of threat weapons capabilities and appropriate flight response.

Prerequisite. DMQ.

Ordnance. None.

External Syllabus Support. ACM capable WST/APT.

FCF-670 2.0 1 CH-46E A (N)(NS)

Goal. Functional Check Flight designation.

Requirement. Effectively demonstrate the ability to perform a full card Functional Check Flight.

(1) Discuss

(a) Maintenance test procedures.

(b) Troubleshooting techniques.

(c) Squadron SOP for maintenance flights.

(d) MIMS.

(2) Introduce. None.

(3) Review. NATOPS Chapter 10, Functional Check Flight Checklist.

Performance Standards

Pilots shall demonstrate the ability to conduct a full-card Functional Check Flight correctly, efficiently, and demonstrate the ability to troubleshoot aircraft problems.

Prerequisite. Squadron FCF syllabus and reading.

Ordnance. None.

External Syllabus Support. None.

160. ORDNANCE REQUIREMENTS

				INDIVIDUAL REQUIREMENTS					
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	EXPENDABLES		.50 CAL		OTHER	
				TOTAL CHF/FLR REQ'D PER "X"		RNDS REQ'D PER "X"		ORD REQ'D PER "X"	
	CC	AG/O		CHAFF	FLARE	PILOT	CC/AG	SMKE	PYRO
COMBAT CAPABLE (100 LEVEL)									
NO ORDNANCE REQUIRED									
COMBAT READY (200 LEVEL) CORE SKILLS									
12	6	6	AG 281			500*	500	2	
~~X~~			282				500		
			283				500		
COMBAT QUALIFIED (300 LEVEL) CORE SKILLS									
12			AG 321	as req'd	as req'd	500*	500		
~~X~~			332				500		
12			EW 331	40	20				
12			DM 441	40	20			2	any avl
12	6	6	TAC371	opt.	opt.				
			372	opt.	opt.	opt.			
			374	20	40	opt.	500		
			375	20	40	opt.	500		
FULL COMBAT QUALIFIED (400 level) CORE PLUS SKILLS (Note: DM 441/442 req'd to be DM qual'd)									
12	6	6	TAC401	20	40	500*	500		
			402	20	40	500*	500		
12	6	6	DM 441	20	40				
			442	20	40				

	100-400 LEVEL PHASES					
	CHAFF	FLARE	.50 CAL		SMOKE	PYRO
Sub TOTAL:	200	280	0	4,500	4	Any avl.

Rounds required for pilots annotated with an asterisk (*) are shown for planning purposes only. In order to meet learning objectives for the event for an initial/Refresher/delinquent pilot shall be afforded the exposure to the requisite ordnance in order to be complete/qualified for the given event. Consideration should be given to meeting learning objectives by matching up an initial/Refresher/delinquent pilot with an initial/Refresher/delinquent crew chief, aerial gunner/observer who are required to expend the appropriate ordnance.

PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	UNIT REQUIREMENTS						
				EXPENDABLES		.50 CAL			OTHER	
				TOTAL CHF/FLR REQ'D TO BE CORE COMPETENT		TOTAL RNDS REQ'D PER TO BE CORE COMPETENT			TOTAL ORD REQ'D TO BE CORE COMPETENT	
	CC	AG/O		CHAFF	FLARE	PLT	CC	AG/O	SMKE	PYRO
COMBAT CAPABLE (100 LEVEL)										
NO ORDNANCE REQUIRED										
COMBAT READY (200 LEVEL) CORE SKILLS										
12	6	6	AG 281				3000	3000	24	
			282				3000	3000		
			283				3000	3000		
COMBAT QUALIFIED (300 LEVEL) CORE SKILLS										
12			AG 321				3000	3000		
			332				3000	3000		
12			EW 331	480	240					
12			DM 441	480	240				24	any avl
12	6	6	TAC371							
			372							
			374	240	480					
			375	240	480					
FULL COMBAT QUALIFIED (400 level) CORE PLUS SKILLS (Note: DM 441/442 req'd to be DM qual'd)										
12	6	6	TAC401	240	480		3000	3000		
			402	240	480		3000	3000		
12	6	6	DM 441	240	480					
			442	240	480					

	REQ'D TO ACHIEVE/MAINTAIN CORE COMPETENCY				
	CHAFF	FLARE	.50 CAL(CC&AG/O)	SMKE	PYRO
Sub TOTAL:	1,920	2,400	42,000	48	Any avl

DOES NOT INCLUDE ORD REQ'D FOR TAC 401/402 (CORE PLUS SKILLS)

			INDIVIDUAL REQUIREMENTS					
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT	T&R CODE	EXPENDABLES		.50 CAL		OTHER	
			TOTAL CHF/FLR REQ'D PER "X"		RNDS REQ'D PER "X"		ORD REQ'D PER "X"	
	CC / AG/O		CHAFF	FLARE	PILOT	CC/AG	SMKE	PYRO
INSTRUCTOR CERTIFICATION (500 LEVEL)								
	2	AG 540				500		
		541				500		
		542				500		
		543				500		
2	2	DM 580	40	20			2	Any avl
		581	20	40				
		582	20	40				

	INSTRUCTOR PHASE					
	CHAFF	FLARE	.50 CAL		SMKE	PYRO
Sub TOTAL:	80	100	0	2,000	2	Any avl

			UNIT REQUIREMENTS						
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT	T&R CODE	EXPENDABLES		.50 CAL			OTHER	
			TOTAL CHF/FLR REQ'D TO BE CORE COMPETENT		TOTAL RNDS REQ'D PER TO BE CORE COMPETENT			TOTAL ORD REQ'D TO BE CORE COMPETENT	
	CC / AG/O		CHAFF	FLARE	PLT	CC	AG/O	SMKE	PYRO
INSTRUCTOR CERTIFICATION									
	2	AG 540				1000			
		541				1000			
		542				1000			
		543				1000			
2	2	DM 580	80	40				4	Any avl
		581	40	80					
		582	40	80					

	REQ'D TO FOR INITIAL CERTIFICATION/CORE COMPETENCY				
	CHAFF	FLARE	.50 CAL	SMKE	PYRO
Sub TOTAL:	160	200	4,000	4	Any avl

				INDIVIDUAL REQUIREMENTS					
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	EXPENDABLES		.50 CAL		OTHER	
				TOTAL CHF/FLR REQ'D PER "X"		RNDS REQ'D PER "X"		ORD REQ'D PER "X"	
	CC	AG/O		CHAFF	FLARE	PILOT	CC/AG	SMKE	PYRO
REQUIREMENTS, QUALIFICATIONS AND DESIGNATION (600 LEVEL)									
12			FL 602						
			603						
			604						
			605						
6			606	as req'd	as req'd	as req'd			
			607	as req'd	as req'd	as req'd			
			608	20	40	200			
4			609	as req'd	as req'd	as req'd			
			610	as req'd	as req'd	as req'd			
			611	20	40	200			
2			612	20	40	200			
2			613						

	FLIGHT LEADERSHIP STAGE					
	CHAFF	FLARE	.50 CAL		SMOKE	PYRO
Sub TOTAL:	60	120	600	0	0	Any avl

				UNIT REQUIREMENTS						
PLT's REQ'D TO BE CORE COMPETENT	# CC & AG/O REQ'D TO BE CORE COMPETENT		T&R CODE	EXPENDABLES		.50 CAL			OTHER	
				TOTAL CHF/FLR REQ'D TO BE CORE COMPETENT		TOTAL RNDS REQ'D PER TO BE CORE COMPETENT			TOTAL ORD REQ'D TO BE CORE COMPETENT	
	CC	AG/O		CHAFF	FLARE	PLT	CC	AG/O	SMKE	PYRO
REQUIREMENTS, QUALIFICATIONS AND DESIGNATION (600 LEVEL)										
12			FL 602							
			603							
			604							
			605							
6			606							
			607							
			608	120	240			1200		
4			609							
			610							
			611	80	160			800		
2			612	40	80			400		
2			613							

	REQ'D FOR INITIAL DESIGNATION/CORE COMPETENCY				
	CHAFF	FLARE	.50 CAL(CC &AG/O)	SMKE	PYRO
Sub TOTAL:	240	480	2,400	0	Any avl

In order for an individual to meet all event requirements, the following ordnance is required:

	INDIVIDUAL REQUIREMENTS					
	EXPENDABLES		.50 CAL		OTHER	
	CHAFF	FLARE	PILOT	CC, AG/O	SMOKE	PYRO
TOTAL:	340	500	600	6,500	6	As req'd

In order for a unit to meet all core skill and core competency requirements, the following ordnance is required:

	UNIT REQUIREMENTS				
	EXPENDABLES		.50 CAL	OTHER	
	CHAFF	FLARE		SMOKE	PYRO
TOTAL:	2,320	3,080	48,400	52	As req'd

The above is not tied to annual requirements, rather to the attainment of core competency. Annual requirements (e.g. to maintain individuals proficiency, unit's core competency) may exceed the totals above due to a specific refly interval of less than 365 days (i.e. TAC codes).

AIRCRAFT: CH-46E MOS: 7562 CREW POSITION: PILOT

STAGE	EVENT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	M	E	REMARKS
COMBAT CAPABLE PHASE									
SFAM	100	2.0	*	0.5	X	X	X		S
	101	2.0	*	0.5	X				S
	102	2.0	*	0.5	X				S
	103	2.0	*	0.5					S
	104	2.0	*	0.5	X	X	X		S
	105	2.0	*	0.5					S
	106	2.0	*	0.5					S
	107	2.0	*	0.5	X	X	X		S
FAM	108	0.0	*	0.0	X	X	X		PREFLIGHT
	109	1.5	*	1.0	X				A
	110	1.5	*	1.0	X				A
	111	1.5	*	1.0	X				A
	112	1.5	*	1.0					A
	113	1.5	*	1.0	X	X	X		A
	114	1.5	*	1.0	X				A
	115	1.5	*	1.0					A
	116	1.5	*	1.0	X	X	X		A
	117	1.5	*	1.0	X	X	X		A N
SFAM	118	2.0	*	0.5	X				S NS
	119	2.0	*	1.0	X	X			A N NS
SINST	120	2.0	*	1.0	X	X	X		S
	121	2.0	*	1.0	X	X	X		S (N)
	122	2.0	*	1.0	X				S N
INST	123	1.5	*	1.0	X	X	X		A/S (N)
	124	1.5	*	1.0	X	X	X		A/S (N)
	125	1.5	*	1.0					A/S (N)
	126	1.5	*	1.0	X	X	X		A/S (N)
NAV	130	1.5	*	1.0					A
	131	1.5	*	1.0					A
	132	1.5	*	1.0					A N
	133	1.5	*	1.0					A N NS
SCAL	140	2.0	*	0.5	X				S
CAL	141	1.5	*	0.5	X	X			A
	142	1.5	*	1.0	X				A N NS
SFORM	150	2.0	*	0.5	X				S
FORM	151	1.5	*	1.0	X	X			A 2 AIRCRAFT
	152	1.5	*	1.0	X				A 2 AIRCRAFT
SEXT	160	2.0	*	0.5	X				S
EXT	161	1.5	*	1.0	X	X			A
TERF	171	1.5	*	0.5	X	X			A
SREV	180	2.0	*	1.0	X	X			S
REV	181	1.5	*	1.0					A
CCX	182	1.5	*	1.0	X	X	X	X	A

Figure 1-2.--MOS 7562 Refly Interval, Combat Readiness Percentage.

AIRCRAFT: CH-46E MOS: 7562 CREW POSITION: PILOT

STAGE	FLT TRNG	CODE	HRS	REFLY INTERVAL	CRP	C	R	E	REMARKS
COMBAT READY PHASE									
SFAM		200	2.0	12	0.3	X			S
FAM		201	1.5	6	0.3	X			A
		202	1.5	6	0.3	X			A N
SCAL		210	2.0	12	0.3	X			S
CAL		211	1.5	6	0.5	X	X		A
		212	1.5	6	0.5	X	X		A 2+AIRCRAFT
		213	1.5	12	0.3	X			A N
SEXT		220	2.0	12	0.3	X			S
EXT		221	1.5	12	0.5	X			A
SFORM		230	2.0	12	0.3	X			S
FORM		231	1.5	6	0.3	X	X		A 2 AIRCRAFT
STERF		240	2.0	12	0.3	X			S
TERF		241	1.5	6	0.5				A
		242	1.5	6	0.5				A
		243	2.0	6	1.0	X	X		A 2 AIRCRAFT
SNVG		250	2.0	12	0.3	X			S NS
NVG		251	1.5	6	0.5	X	X		A N NS
		252	1.5	6	0.5	X			A 2 AIRCRAFT N NS
		253	1.5	6	1.0	X	X		A 2 AIRCRAFT N NS
		254	1.5	6	1.0	X			A 3+ AIRCRAFT N NS
		255	1.5	6	1.0	X			A N NS
		256	1.5	6	1.0	X			A 2 AIRCRAFT N NS
		257	1.5	6	1.0	X	X		A 2 AIRCRAFT N NS
AG		281	1.5	12	0.5	X			A
SCQ		290	2.0	12	0.5	X			S N NS
CQ		291	1.0	12	0.5	X			A
		292	1.0	12	0.5	X			A N
		293	1.0	12	0.5	X			A N NS
COMBAT QUALIFICATION PHASE									
CQ		300	1.0	12	0.7	X			A
		301	1.0	12	1.0	X			A N NS
SNVG		310	2.0	12	0.5	X			S NS
NVG		311	1.5	6	1.0	X	X		A N NS
		312	1.5	6	1.0	X	X		A 2 AIRCRAFT N NS
		313	1.5	6	1.5				A 3+ AIRCRAFT N NS
		314	1.5	6	1.2	X	X		A 2 AIRCRAFT N NS
AG		321	1.5	12	0.7	X			A N NS

Figure 1-2.--MOS 7562 Refly Interval, Combat Readiness Percentage--Continued.

AIRCRAFT: CH-46E MOS: 7562 CREW POSITION: PILOT

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	E	REMARKS
SEW	330	2.0	12	0.5	X			S
EW	331	1.5	12	0.5	X			A
SDM	340	2.0	12	0.5	X			S
DM	341	1.5	12	1.0	X	X		A 2 AIRCRAFT
SMAT	350	2.0	12	0.5	X			S
MAT	351	1.5	12	0.7	X	X		A/S
SHIE	360	2.0	12	0.3	X			S
HIE	361	1.0	12	0.7	X	X		A
	362	1.0	12	0.5	X			A N NS
STAC	370	2.0	12	0.5	X			S
TAC	371	1.5	6	1.0	X			A 2+ AIRCRAFT
	372	1.5	6	1.0	X			A 2+ AIRCRAFT N NS
STAC	373	2.0	12	0.5	X			S N NS
TAC	374	1.5	6	1.5	X	X		A 2+ AIRCRAFT
	375	1.5	6	1.5	X	X		A 2+ AIRCRAFT N NS
SNBC	380	2.0	12	0.3	X	X		S NS
SEXT	390	2.0	12	0.1	X			S
EXT	391	1.5	12	0.3	X	X		A
	392	1.5	12	0.5	X	X		A N NS
FULL COMBAT QUALIFICATION PHASE								
STAC	400	2.0	12	0.3	X			S NS
TAC	401	1.5	12	0.4	X			A 2+ AIRCRAFT
	402	1.5	12	0.4	X			A 2+ AIRCRAFT N NS
NBC	430	1.0	12	0.3	X			A
	431	1.0	12	0.3	X			A N NS
SDM	440	2.0	12	0.3	X			S
DM	441	1.5	12	0.4	X	X		A 2 V 1 R/W
	442	1.5	12	0.4	X	X		A 2 V 1 F/W
MAT	450	1.5	12	0.3	X			A 2 AIRCRAFT
	451	1.5	12	0.3	X			A N NS
HIE	460	1.0	12	0.2	X			A
	461	1.0	12	0.3	X			A (N)(NS)
	462	1.0	12	0.3	X			A
	463	1.0	12	0.3	X			A (N)(NS)
CQ	491	1.0	12	0.5	X			A N

Figure 1-2.--MOS 7562 Refly Interval, Combat Readiness Percentage--Continued.

AIRCRAFT: CH-46E MOS: 7562 CREW POSITION: PILOT

STAGE	FLT TRNG	CODE	HRS	REFLY INTERVAL	CRP	C	R	E	REMARKS
INSTRUCTOR TRAINING REQUIREMENTS									
FAM		500	1.5	*	0.0			X	A
		501	1.5	*	0.0			X	A/S
		502	1.5	*	0.0			X	A/S N
INST		503	1.5	*	0.0			X	A/S
		504	1.5	*	0.0			X	A/S
NAV		505	1.5	*	0.0			X	A
EXT		506	1.5	*	0.0			X	A
CAL		507	1.5	*	0.0			X	A/S
FORM		509	1.5	*	0.0			X	A 2 AIRCRAFT
IUT		511	3.0	*	0.0			X	A
NVG		513	1.5	*	0.0			X	A N NS
REQUIREMENTS QUALIFICATIONS AND DESIGNATIONS (RQD)									
RQD		600	1.5	*	0.0			X	A/S (N)(NS)
		601	1.5	*	0.0			X	S/A (N)(NS)
FLIGHT LEADERSHIP (FL)									
FL		602	1.5	*	0.0			X	A/S
		603	1.5	*	0.0			X	A/S N NS
		604	1.5	*	0.0			X	A
		605	1.5	*	0.0			X	A N NS
		606	1.5	*	0.0			X	A 2 AIRCRAFT
		607	1.5	*	0.0				A 2 AIRCRAFT N NS
		608	1.5	*	0.0			X	A 2 AIRCRAFT (N) (NS)
		609	1.5	*	0.0				A 3+ AIRCRAFT
		610	1.5	*	0.0				A 3+ AIRCRAFT N NS
		611	1.5	*	0.0			X	A 3+ AIRCRAFT (N) (NS)
		612	1.5	*	0.0			X	A 5+ AIRCRAFT (N) (NS)
		613	1.5	*	0.0			X	A 2+ DIV(N) (NS)

Figure 1-2.--MOS 7562 Refly Interval, Combat Readiness Percentage--Continued.

AIRCRAFT: CH-46E MOS: 7562 CREW POSITION: PILOT

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	E	REMARKS
SPECIAL TRAINING								
AWT	620	2.0	*	0.0				A (N)(NS)
DES	630	2.0	*	0.0				A (N)(NS)
SCRM	640	2.0	12	0.0	X	X		S/A
WTR	650	1.0	*	0.0	X	X		A/S
SACM	660	2.0	*	0.0	X	X		S
FCP	670	1.5	*	0.0	X	X		A

Figure 1-2.--MOS 7562 Refly Interval Combat Readiness Percentage--Continued.

PILOT FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
SFAM	200	201,202
FAM	201	200
	202	200,201
SCAL	210	
CAL	211	210
	212	210,211
	213	210,211
SEXT	220	210
EXT	221	210,211,220
SFORM	230	
FORM	231	230
STERF	240	
TERF	241	240
	242	240,241
	243	230,231,240,241,242
SNVG	250	210
NVG	251	210,211,250
	252	230,231
	253	210,211,212,230,231,250,251,252
	254	210,211,212,230,231,250,251,252,253
	255	240,241,242
	256	230,231,240,241,242,243,252
	257	210,211,212,230,231,240,241,242,243,250,251, 252,253,255,256
AG	281	
SCQ	290	210
CQ	291	210,211,290
	292	210,211,213,290,291,
	293	210,211,250,251,290,291,292
CQ	300	210,211,290,291
	301	210,211,250,251,290,291,292,293,300,491
SNVG	310	210,250
NVG	311	210,211,250,251,310
	312	210, 211,212,230,231,250,251,252,253,254,310, 311
	313	210,211,212,230,231,240,241,242,243,250,251, 252,253,254,310,311,312
	314	210,211,212,230,231,240,241,242,243,250,251, 252,253,255,256,257,310,311,312
AG	321	281

Figure 1-3.--Pilot Flight Update Chaining.

PILOT FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
SEW	330	240,331
EW	331	240,241,330
SDM	340	230,231,240,330,331
DM	341	230,231,240,241,243,330,331,340
SMAT	350	210
MAT	351	210,211,350
SHIE	360	220
HIE	361	220,221,360,
	362	220,221,250,251,360,361,390,392
STAC	370	210,230,240
TAC	371	210,211,212,230,231,240,241,242,243,370
	372	210,211,212,230,231,240,241,242,243,251,252, 253,255,256,257,370,371
STAC	373	210,230,240,370
TAC	374	210,211,212,230,231,240,241,242,243,370,371,373
	375	210,211,212,230,231,240,241,242,243,251,252, 253,255,256,257,370,371,372,373,374
SNBC	380	210,250
SEXT	390	210,220,240,250
EXT	391	210,211,220,221,240,241,242,390
	392	210,211,220,221,390
STAC	400	210,230,240,340,370,373
TAC	401	210,211,212,230,231,240,241,242,243,330,331,370 371,373,374,400
	402	210,211,212,230,231,240,241,242,243,251,252,253 255,256,257,330,331,370,371,373,374,375,400,401
NBC	430	210,380
	431	210,211,380,430
SDM	440	230
DM	441	230,231,440
	442	230,231,440
MAT	450	210,211,212,350,351
	451	210,211,250,251,350,351
HIE	460	210,211,220,221
	461	
	462	
	463	
CQ	491	210,211,213,290,291,292,300

Figure 1-3.--Pilot Flight Update Chaining--Continued.

PILOT FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
NSSI	550	200,201
	551	200,201,210,211,250,251,310,311
	552	200,201,210,211,250,251,310,311
NSFI	560	200,201
	561	200,201,210,211,250,251
	562	200,201,210,211,250,251
TERFI	570	200,201,220,221,240,241,242,390,391
	571	200,201,230,231,240,241,242,243
	572	200,201,240,241,242,243
DMI	580	230,231,240,241,243,330,331,340,341
	581	230,231,240,241,243,441 if versus RW OR 442 if versus FW
	582	230,231,240,241,243,441 if versus RW OR 442 if versus FW
NSI	590	200,201,210,211,250,251,290,291,292,293,311 if conducted LLL
	591	200,201,210,211,220,221,250,251,390,392,311 if conducted LLL
	592	200,201,210,211,212,250,251,252,253, also 310,311,312,314 if conducted LLL
	593	200,201,210,211,212,240,241,242,243,250,251, 252,253,255,256,257,also 310,311,312,314 if conducted LLL
	594	200,201,210,211,220,221,250,251,290,291,292, 293,311,390,392
	595	210,211,212,230,231,240,241,242,243,250,251, 252,253,255,256,257,310,311,312,314

Figure 1-3.--Pilot Flight Update Chaining--Continued.

CHAPTER 2

CH-46E CREW CHIEF/AERIAL GUNNER/OBSERVER

FIGURES

CHAPTER 2

CH-46E CREW CHIEF/AERIAL GUNNER/OBSERVER

200. MARINE MEDIUM HELICOPTER SQUADRON - CH-46E UNIT TEMPLATE

NOTE

The capabilities defined and described in the core capability and unit template sections are provided to ensure each like-squadron maintains a common base of training and depth of capabilities. When resources permit, and when in the judgment of the commander additional training would significantly increase the unit's war fighting capability, training to a level above these base capabilities is permitted. It is incumbent upon and expected of the commander to balance any increase in the depth of core capabilities against the long-term health and readiness of his unit while staying within resource constraints.

1. Table Of Organization

12 CH-46E
28 Pilots
19 Crew Chiefs
19 Aerial Gunner/Observers

2. Squadron Core Capability

a. A Core Capable squadron is able to sustain the following minimum performance on a daily basis during sustained contingency/combat operations, assuming at least 100% Primary Authorized Allowance (PAA), 90% in reporting status and 90% T/O on hand in all MOSs. If < 90%, core capability will be degraded by a like-percentage. The extent to which a Core Capable squadron is able to surge beyond its core capability is situational dependent.

b. Within a 24-hour period, a Core Capable squadron is able to sortie two divisions of three aircraft each (or a flight of six) of mission capable aircraft crewed by Night Systems Qualified (NSQ) aircrew on any mission essential task in a medium threat environment.

3. Basic Aircrew Qualifications. As a minimum, to be considered Core Competent, a squadron must possess the following numbers of aircrew who are 100% complete in each listed core skill (200 and 300 Level events). (Note: If a squadron is < T/O, required numbers are reduced by a like %.)

CORE SKILL	SQUADRON TOTAL CC/(AO)
FAM	6(0)
CAL	6(0)
EXT	6(6)
FORM	6(6)
TERF	6(6)
NVG (HLL)	6(6)
NVG (LLL)	6(6)
CQ	6(6)
AG	6(6)
EW	6(6)
DM	6(6)
MAT	6(0)
HIE	6(6)
TAC	6(6)
NBC	6(6)

4. Enlisted Instructor Qualifications. As a minimum, for a squadron to be considered Core Competent, it must possess the following numbers of aircrew in the listed instructor categories. (Note: If the squadron is < T/O, required numbers are reduced by a like %).

DESIGNATION	SQDN C/C(A/O)
ETERFI	4
EDMI	2
ENSI	4
EWTI	2**
AGI	2
** One shall be assigned in operations as the squadron enlisted WTI	

5. Events Required For Designation As Crew Chief Instructor. To be designated as an enlisted instructor refer to the MAWTS-1 Course Catalog.

6. The following matrix lists all codes needed for qualifications and designations for both the crew chief and aerial gunner/observer:

INITIAL EVENTS		INITIAL DOCUMENTATION PROCEDURE	REQUIREMENT IF DELINQUENT BUT **FRS NOT REQUIRED**	DOCUMENTATION IF DELINQUENT BUT **FRS NOT REQUIRED**
QUALIFICATIONS				
AG	AG 281 AG 282 AG 283 AG 321 AG 322	1. Letter from CO granting qualification in NATOPS Jacket. 2. Copy of letter in APR. 3. Logbook entry.	1. Qualification not valid only if delinquent in ALL initial qualification events. 2. Regain proficiency by flying delinquent events. 3. Stage proficiency may be regained by flying “R” syllabus. Senior “R” coded event in stage shall be flown. 4. Qualification is valid once proficiency is regained.	1. Qualifications are command specific. Therefore, if aircrew has not had PCS or PCA orders since previous qualification letter, no additional qualification letter is required. 2. Follow-on commands shall repeat “initial documentation procedure.”
CQ	CQ 300 CQ 301 CQ 302			
TERFQ	TERF 241 TERF 242 TERF 243			
DMQ	DM 341 DM 441 DM 442			
NSQ(HLL)	NVG 251 to NVG 257			
NSQ(LLL)	NVG 311 to NVG 314			
INSTRUCTOR DESIGNATIONS				
AGI	AG 540 AG 541 AG 542 AG 543	1. Letter from CO granting instructor designation in NATOPS Jacket. 2. Copy of letter in APR. 3. Logbook entry.	1. Instructor re-certification is not required unless attendance at FRS is required or instructor certification is removed for cause. 2. Instructor must be proficient in codes that are being instructed.	1. Additional paperwork is not required unless re-certification is required. 2. Re-certification shall follow “initial documentation procedure.”
TERFI	TERF 570 TERF 571			
DMI	DM 580 DM 581 DM 582			
NSFI	NVG 560 NVG 561			
NSSI	NVG 562 NVG 563 NVG 564			
NSI	NVG 590 NVG 591 NVG 592 NVG 593			

201. PROGRAMS OF INSTRUCTION (POI) FOR BASIC AND TRANSITION CREW CHIEF

WEEKS	COURSE/PHASE	ACTIVITY
1-22	Combat Capable Phase	HMM(T)-164
23-29	Combat Ready Phase	Tactical Squadron
30-38	Combat Qualification Phase	Tactical Squadron
39-48	Full Combat Qualification Phase	Tactical Squadron

202. POI FOR BASIC AND TRANSITION AERIAL GUNNER/OBSERVER

WEEKS	COURSE/PHASE	ACTIVITY
1-16	Combat Ready Phase	Tactical Squadron
17-20	Combat Qualification Phase	Tactical Squadron
21-24	Full Combat Qualification Phase	Tactical Squadron

203. POI FOR CONVERSION CREW CHIEF

WEEKS	COURSE/PHASE	ACTIVITY
1-22	Combat Capable Phase	HMM(T)-164
23-29	Combat Ready Phase	Tactical Squadron
30-38	Combat Qualification Phase	Tactical Squadron
39-48	Full Combat Qualification Phase	Tactical Squadron

204. POI FOR REFRESHER CREW CHIEF

WEEKS	COURSE/PHASE	ACTIVITY
0	Combat Capable Phase	Tactical Squadron
1-10	Combat Ready Phase	Tactical Squadron
11-18	Combat Qualification Phase	Tactical Squadron
19-26	Full Combat Qualification Phase	Tactical Squadron

205. POI FOR MODIFIED REFRESHER CREW CHIEF

WEEKS	COURSE/PHASE	ACTIVITY
1-3	Combat Ready Phase	Tactical Squadron
4-8	Combat Qualification Phase	Tactical Squadron
9-12	Full Combat Qualification Phase	Tactical Squadron

206. POI FOR REFRESHER AERIAL GUNNER/OBSERVER

WEEKS	COURSE/PHASE	ACTIVITY
1-13	Combat Ready Phase	Tactical Squadron
14-18	Combat Qualification Phase	Tactical Squadron
19-22	Full Combat Qualification Phase	Tactical Squadron

210. GROUND/ACADEMIC TRAINING COURSES OF INSTRUCTION

Aviation Physiology
Aviation Water Survival
SERE Training
CH-46 Familiarization
MAWTS-1 Academic Support Package
Enlisted Weapons and Tactics Instructor Course
CRM
NATOPS Flight Manual Introduction
Aircrew Pocket Checklist
Safety Publications
Survival Equipment
Communications Procedures
Ground Handling
Fueling and Servicing
Plane Captain
Night Lab
Map Interpretation
Squadron SOP/NATOPS Manual
Threat Recognition
NWP 3-22.5-CH-46E, CH-46E Tactical Manual, Volumes I and II

211. FREST TRAINING

NATOPS Flight Manual Introduction
Aircrew Pocket Checklist
Safety Publications
Survival Equipment
Communications Procedures
Ground Handling
Fueling and Servicing
Plane Captain
CRM
T&R Manual, CH-46E

212. SQUADRON LEVEL TRAINING

ALE-39 Usage
Map Interpretation
Squadron SOP/NATOPS Manual
Threat Recognition
CRM

220. FLIGHT TRAINING FOR BASIC AND TRANSITION CREW CHIEF

1. Combat Capable Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Familiarization	4/0	6.5/0.0	14.0/0.0
Navigation	2/0	3.0/0.0	9.5/0.0
Confined Area Landings	2/0	3.0/0.0	9.5/0.0
Formation	2/0	3.0/0.0	9.0/0.0
External Loads	1/0	1.5/0.0	4.5/0.0
Terrain Flight	1/1	2.0/0.0	4.0/0.0
Crew Chief Evaluation	2/0	3.5/0.0	9.5/0.0
TOTAL FOR PHASE	**14/1**	**22.5/0.0**	**60.0/0.0**
COMBINED TOTALS	**15**	**22.5**	**60.0%**
ACCUMULATION FOR BASIC POI	**15**	**22.5**	**60.0%**

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Familiarization	1/0	1.5/0.0	0.5/0.0
Confined Area Landings	3/0	4.5/0.0	2.0/0.0
External Cargo Operations	1/0	1.5/0.0	1.0/0.0
Formation	1/0	1.5/0.0	0.5/0.0
Terrain Flight	3/0	4.5/0.0	2.0/0.0
Night Vision Devices (HLL)	7/0	10.5/0.0	5.0/0.0
Aerial Gunnery	3/1	4.5/1.5	2.5/0.0
Carrier Qualification	3/0	3.0/0.0	1.5/0.0
TOTAL FOR PHASE	**22/1**	**31.5/1.5**	**15.0/0.0**
COMBINED TOTALS	**23**	**33.0**	**15.0%**
ACCUMULATION FOR BASIC POI	**38**	**55.5**	**75.0%**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Carrier Qualification	2/0	2.5/0.0	2.0/0.0
Night Vision Devices (LLL)	4/0	6.0/0.0	4.0/0.0
Aerial Gunnery	2/1	3.0/1.5	2.5/0.0
Electronic Warfare	1/0	1.5/0.0	0.5/0.0
Defensive Measures	1/0	1.5/0.0	1.0/0.0
Mountain Area Training	1/0	1.5/0.0	0.5/0.0
Helicopter Insertion/Extraction	2/0	2.0/0.0	2.0/0.0
Tactics	4/0	6.0/0.0	5.0/0.0
Externals	2/0	3.0/0.0	2.5/0.0
TOTAL FOR PHASE	**19/1**	**27.0/1.5**	**20.0/0.0**
COMBINED TOTALS	**20**	**28.5**	**20.0%**
ACCUMULATION FOR BASIC POI	**58**	**84.0**	**95.0%**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Tactics	2/0	3.0/0.0	1.0/0.0
Nuclear, Biological, and Chemical	2/0	2.0/0.0	0.5/0.0
Defensive Measures	2/0	3.0/0.0	1.0/0.0
Mountain Area Training	2/0	3.0/0.0	0.6/0.0
Helicopter Insertion/Extraction	4/0	4.0/0.0	1.6/0.0
Simulator Familiarization	0/1	0.0/1.5	0.0/0.0
Carrier Qualification	1/0	1.0/0.0	0.3/0.0
TOTAL FOR PHASE	**13/1**	**16.0/1.5**	**5.0/0.0**
COMBINED TOTALS	**14**	**17.5**	**5.0%**
TOTALS FOR BASIC POI	**72**	**101.5**	**100.0%**

221. FLIGHT TRAINING FOR CONVERSION CREW CHIEF

1. Combat Capable Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	4/0	6.5/0.0
Navigation	2/0	3.0/0.0
Confined Area Landings	2/0	3.0/0.0
Formation	2/0	3.0/0.0
External Loads	1/0	1.5/0.0
Terrain Flight	1/1	2.0/0.0
Crew Chief Evaluation	2/0	3.5/0.0
TOTAL FOR PHASE	**14/1**	**22.5/0.0**
COMBINED TOTALS	**15**	**22.5**
ACCUMULATION FOR CONVERSION POI	**15**	**22.5**

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	1/0	1.5/0.0
Confined Area Landings	3/0	4.5/0.0
External Cargo Operations	1/0	1.5/0.0
Formation	1/0	1.5/0.0
Terrain Flight	1/0	1.5/0.0
Night Vision Devices (HLL)	6/0	9.0/0.0
Aerial Gunnery	3/1	4.5/1.5
Carrier Qualification	3/0	3.0/0.0
TOTAL FOR PHASE	**19/1**	**27.0/1.5**
COMBINED TOTALS	**20**	**28.5**
ACCUMULATION FOR CONVERSION POI	**35**	**51.0**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Carrier Qualification	2/0	2.5/0.0
Night Vision Devices (LLL)	4/0	6.0/0.0
Aerial Gunnery	2/1	3.0/1.5
Electronic Warfare	1/0	1.5/0.0
Defensive Measures	1/0	1.5/0.0
Mountain Area Training	1/0	1.5/0.0
Helicopter Insertion/Extraction	2/0	2.0/0.0
Tactics	4/0	6.0/0.0
Externals	2/0	3.0/0.0
TOTAL FOR PHASE	**19/1**	**27.0/1.5**
COMBINED TOTALS	**20**	**28.5**
ACCUMULATION FOR CONVERSION POI	**54**	**78.5**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Tactics	2/0	3.0/0.0
Nuclear, Biological, and Chemical	2/0	2.0/0.0
Defensive Measures	2/0	3.0/0.0
Mountain Area Training	2/0	3.0/0.0
Helicopter Insertion/Extraction	4/0	4.0/0.0
Simulator Familiarization	0/1	0.0/1.5
Carrier Qualification	1/0	1.0/0.0
TOTAL FOR PHASE	**13/1**	**16.0/1.5**
COMBINED TOTALS	**14**	**17.5**
TOTALS FOR CONVERSION POI	**68**	**97.0**

222. FLIGHT TRAINING FOR REFRESHER CREW CHIEF

1. Combat Capable Training

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM

NOT APPLICABLE

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	1/0	1.5/0.0
Confined Area Landings	2/0	3.0/0.0
External Cargo Operations	1/0	1.5/0.0
Formation	1/0	1.5/0.0
Terrain Flight	2/0	3.0/0.0
Night Vision Devices (HLL)	5/0	7.5/0.0
Aerial Gunnery	2/1	3.0/1.5
Carrier Qualification	3/0	3.0/0.0
TOTAL FOR PHASE	**17/1**	**24.0/1.5**
COMBINED TOTALS	**18**	**25.5**
ACCUMULATION FOR REFRESHER CREW CHIEF POI	**18**	**25.5**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Carrier Qualification	2/0	2.5/0.0
Night Vision Devices (LLL)	4/0	6.0/0.0
Aerial Gunnery	2/0	3.0/0.0
Electronic Warfare	1/0	1.5/0.0
Defensive Measures	1/0	1.5/0.0
Mountain Area Training	1/0	1.5/0.0
Helicopter Insertion/Extraction	2/0	2.0/0.0
Tactics	4/0	6.0/0.0
Externals	2/0	3.0/0.0
TOTAL FOR PHASE	**19/0**	**27.0/0.0**
COMBINED TOTALS	**19**	**27.0**
ACCUMULATION FOR REFRESHER POI	**37**	**52.5**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Tactics	2/0	3.0/0.0
Nuclear, Biological, and Chemical	2/0	2.0/0.0
Defensive Measures	2/0	3.0/0.0
Mountain Area Training	2/0	3.0/0.0
Helicopter Insertion/Extraction	4/0	4.0/0.0
Simulator Familiarization	0/1	0.0/1.5
Carrier Qualification	1/0	1.0/0.0
TOTAL FOR PHASE	**13/1**	**16.0/1.5**
COMBINED TOTALS	**14**	**17.5**
TOTALS FOR REFRESHER POI	**51**	**70.0**

223. FLIGHT TRAINING FOR SECONDARY MOS CREW CHIEF

1. Combat Capable Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	1/0	1.5/0.0
Confined Area Landings	1/0	1.5/0.0
Formation	1/0	1.5/0.0
External Loads	1/0	1.5/0.0
Terrain Flight	1/0	1.5/0.0
Crew Chief Evaluation	2/0	3.5/0.0
TOTAL FOR PHASE	**7/O**	**11.0/0.0**
COMBINED TOTALS	**7**	**11.0**
ACCUMULATION FOR SECONDARY MOS CREW CHIEF POI	**7**	**11.0**

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Confined Area Landings	2/0	3.0/0.0
External Cargo Operations	1/0	1.5/0.0
Terrain Flight	1/0	1.5/0.0
Night Vision Devices (HLL)	4/0	6.0/0.0
Aerial Gunnery	2/0	3.0/0.0
Carrier Qualification	2/0	2.0/0.0
TOTAL FOR PHASE	**12/0**	**17.0/0.0**
COMBINED TOTALS	**12**	**17.0**
ACCUMULATION FOR SECONDARY MOS CREW CHIEF POI	**19**	**28.0**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Carrier Qualification	3/0	3.0/0.0
Night Vision Devices (LLL)	3/0	4.5/0.0
Aerial Gunnery	1/0	1.5/0.0
Defensive Measures	1/0	1.5/0.0
Mountain Area Training	1/0	1.5/0.0
Helicopter Insertion/Extraction	2/0	2.0/0.0
Tactics	4/0	6.0/0.0
Externals	2/0	3.0/0.0
TOTAL FOR PHASE	**17/0**	**23.0/0.0**
COMBINED TOTALS	**17**	**23.0**
ACCUMULATION FOR SECONDARY MOS CREW CHIEF POI	**36**	**51.0**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Tactics	2/0	3.0/0.0
Defensive Measures	2/0	3.0/0.0
Mountain Area Training	2/0	3.0/0.0
Helicopter Insertion/Extraction	4/0	4.5/0.0
Simulator Familiarization	0/1	0.0/1.5
TOTAL FOR PHASE	**10/1**	**13.5/1.5**
COMBINED TOTALS	**11**	**15.0**
TOTALS FOR SECONDARY MOS CREW CHIEF POI	**47**	**66.0**

224. FLIGHT TRAINING FOR BASIC AND TRANSITION AERIAL GUNNER AND OBSERVER

1. Combat Capable Phase. Completion of OPNAV 3710 requirements to include flight physical, physiology, swim qualification and issue of non-crewmember flight orders constitutes completion of the Combat Capable Phase.

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Familiarization	1/0	1.5/0.0	0.5/0.0
Confined Area Landings	2/0	3.0/0.0	1.0/0.0
Formation	1/0	1.5/0.0	0.5/0.0
Terrain Flight	3/0	4.5/0.0	2.0/0.0
Night Vision Devices (HLL)	7/0	10.5/0.0	6.0/0.0
Air-to-Ground	3/1	4.5/1.5	4.0/0.0
Carrier Qualification	2/0	2.0/0.0	1.0/0.0
TOTAL FOR PHASE	**19/1**	**27.5/1.5**	**15.0/0.0**
COMBINED TOTALS	**20**	**29.0**	**15.0%**
ACCUMULATION FOR BASIC POI	**20**	**29.0**	**75.0%**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Carrier Qualification	2/0	2.0/0.0	2.0/0.0
Night Vision Devices (LLL)	4/0	6.0/0.0	5.0/0.0
Air-to-Ground	2/1	3.0/1.5	2.0/0.0
Electronic Warfare	1/0	1.5/0.0	1.0/0.0
Defensive Measures	1/0	1.5/0.0	1.0/0.0
Helicopter Insertion/Extraction	1/0	1.0/0.0	1.0/0.0
Tactics	4/0	6.0/0.0	6.0/0.0
Externals	2/0	3.0/0.0	2.0/0/0
TOTAL FOR PHASE	**17/1**	**24.0/1.5**	**20.0/0.0**
COMBINED TOTALS	**18**	**25.5**	**20.0%**
ACCUMULATION FOR BASIC POI	**38**	**54.5**	**95.0%**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM	CRP ACFT/SIM
Tactics	2/0	3.0/0.0	1.4/0.0
Nuclear, Biological, and Chemical	2/0	2.0/0.0	1.6/0.0
Defensive Measures	2/0	3.0/0.0	1.0/0.0
Mountain Area Training	1/0	1.5/0.0	0.5/0.0
Helicopter Insertion/Extraction	1/0	1.0/0.0	0.5/0.0
TOTAL FOR PHASE	**8/0**	**10.5/0.0**	**5.0/0.0**
COMBINED TOTALS	**8**	**10.5**	**5.0%**
TOTALS FOR BASIC POI	**46**	**65.0**	**100.0%**

225. FLIGHT TRAINING FOR CONVERSION AERIAL GUNNER/OBSERVER

1. Combat Capable Phase. Completion of OPNAV 3710 requirements to include flight physical, physiology, swim qualification and issue of non-crewmember flight orders constitutes completion of the Combat Capable Phase.

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	1/0	1.5/0.0
Confined Area Landings	2/0	3.0/0.0
Formation	1/0	1.5/0.0
Terrain Flight	1/0	1.5/0.0
Night Vision Devices (HLL)	6/0	9.0/0.0
Air-to-Ground	3/0	4.5/0.0
Carrier Qualification	2/0	2.0/0.0
TOTAL FOR PHASE	**16/0**	**23/0.0**
COMBINED TOTALS	**16**	**23**
ACCUMULATION FOR CONVERSION POI	**16**	**23**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Carrier Qualification	2/0	2.0/0.0
Night Vision Devices (LLL)	4/0	6.0/0.0
Air-to-Ground	2/0	3.0/0.0
Electronic Warfare	1/0	1.5/0.0
Defensive Measures	1/0	1.5/0.0
Mountain Area Training	1/0	1.5/0.0
Helicopter Insertion/Extraction	1/0	1.0/0.0
Tactics	4/0	6.0/0.0
Externals	2/0	3.0/0.0
TOTAL FOR PHASE	**18/0**	**25.5/0.0**
COMBINED TOTALS	**18**	**25.5**
ACCUMULATION FOR CONVERSION POI	**34**	**48.5**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Tactics	2/0	3.0/0.0
Nuclear, Biological, and Chemical	2/0	2.0/0.0
Defensive Measures	2/0	3.0/0.0
Mountain Area Training	1/0	1.5/0.0
Helicopter Insertion/Extraction	1/0	1.0/0.0
TOTAL FOR PHASE	**8/0**	**10.5/0.0**
COMBINED TOTALS	**8**	**10.5**
TOTALS FOR CONVERSION POI	**42**	**59**

226. FLIGHT TRAINING FOR REFRESHER AERIAL GUNNER/OBSERVER

1. Combat Capable Phase. Completion of OPNAV 3710 requirements to include flight physical, physiology, swim qualification and issue of non-crewmember flight orders constitutes completion of the Combat Capable Phase.

2. Combat Ready Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Familiarization	1/0	1.5/0.0
Confined Area Landings	1/0	1.5/0.0
Formation	1/0	1.5/0.0
Terrain Flight	1/0	1.5/0.0
Night Vision Devices (HLL)	5/0	7.5/0.0
Air-to-Ground	2/0	3.0/0.0
Carrier Qualification	2/0	2.0/0.0
TOTAL FOR PHASE	**13/0**	**18.5/0.0**
COMBINED TOTALS	**13**	**18.5**
ACCUMULATION FOR REFRESHER POI	**13**	**18.5**

3. Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Carrier Qualification	3/0	3.0/0.0
Night Vision Devices (LLL)	4/0	6.0/0.0
Air-to-Ground	1/0	1.5/0.0
Electronic Warfare	1/0	1.5/0.0
Defensive Measures	1/0	1.5/0.0
Mountain Area Training	1/0	1.5/0.0
Helicopter Insertion/Extraction	1/0	1.0/0.0
Tactics	4/0	6.0/0.0
Externals	2/0	2.5/0.0
TOTAL FOR PHASE	**18/0**	**24.5/0.0**
COMBINED TOTALS	**18**	**24.5**
ACCUMULATION FOR REFRESHER POI	**31**	**43.0**

4. Full Combat Qualification Phase

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Tactics	2/0	3.0/0.0
Nuclear, Biological, and Chemical	2/0	2.0/0.0
Defensive Measures	2/0	3.0/0.0
Mountain Area Training	1/0	1.5/0.0
Helicopter Insertion/Extraction	1/0	1.0/0.0
TOTAL FOR PHASE	**8/0**	**10.5/0.0**
COMBINED TOTALS	**8**	**10.5**
TOTALS FOR REFRESHER POI	**39**	**53.5**

227. INSTRUCTOR TRAINING

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Instructor Under Training	1	2.0

228. REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Annual NATOPS Evaluation	1	1.5

229. SPECIAL FLIGHT TRAINING

STAGE	NO. EVENTS ACFT/SIM	NO. HOURS ACFT/SIM
Arctic Weather Training	1	2.0
Desert Operations	1	2.0
CRM Training	1	2.0
Water Landings	1	1.0
SPECIAL FLIGHT TOTAL	**4**	**7.0**

230. GROUND/FLIGHT/SIMULATOR/PERFORMANCE REQUIREMENTS

1. General

a. Aircrews shall fly events annotated with an "N" at least 30 minutes after official sunset. Aircrews may fly events annotated with "(N)" at night.

b. Aircrews shall fly events annotated with an "NS" with NVDs for the entire flight. Events annotated with (NS) may be conducted at night utilizing NVDs.

c. All flights annotated with an "E" shall be evaluated per T&R Manual, Administrative.

d. The Enlisted WTI shall ensure all Aircrew Training Forms (ATFs) are entered in section 3 of the APR for all initial events flown. These ATFs shall remain until a more current ATF replaces it.

e. Conversion and Refresher aircrews shall have ATFs entered in section 3 of the APR for all flights designated by a "C" or "R" in the flight description. These ATFs will replace ATFs previously entered in section 3.

f. Deferred events. Flight training events that are not flown in Combat Capable training shall be flown in the subsequent stage of training.

g. Prior qualification. Crew chiefs who have been previously qualified but are not current will be programmed to fly the Refresher crew chief POI.

h. Designation as Aerial Gunner/Observer. After being qualified NSQ (LLL), AG and completion of RQD-600 an AGOUI may be designated an Aerial Gunner/Observer by the commanding officer.

i. Simulator Training. Although a current simulator does not exist, a request for an Aerial Gunner simulator has been forwarded.

j. Aircraft And Simulator Codes. These codes are assigned to delineate whether the event uses a simulator or an airframe. The codes are located in the event header following the POI codes. A= aircraft, S= simulator, A/S= aircraft preferred/simulator optional, S/A= simulator preferred/aircraft optional. Until an aircraft simulator becomes operational, unit commanders may waive appropriate syllabus events.

2. Evaluation Events. These events shall be flown with an experienced aerial gunner instructor or crew chief instructor designated for the specific flight instruction required.

a. A designated NATOPS Instructor/Assistant NATOPS Instructor shall evaluate RQD-600 for both the crew chief and aerial gunner/observer. AGOUI

shall fly RQD-600 prior to being designated an aerial gunner/observer and after being qualified NSQ (LLL) and AG qualified.

b. A crew chief instructor proficient in a given event shall evaluate any initial event required for a Basic, Conversion, Transition, or Refresher crew chief or aerial gunner/observer. A qualified and designated crew chief evaluator or AGI will complete an ATF. Pilots and observers will not sign off crew chief ATFs with the exception of initial SFAM-470.

c. If the commanding officer has waived a syllabus event, the enlisted WTI must place a waiver letter in section 3 of the APR.

3. Syllabus Assignment

a. Basic and Transition crew chiefs will be assigned to fly the entire syllabus. Conversion and Refresher crew chiefs will fly those flights designated by a "C" or an "R" in the event description (CC center of page and AGO to the right). Basic and Transition aerial gunner/observers will fly the same syllabus as the respective crew chief except as noted in the crew requirements for each stage as listed in Figure 2-1.

b. Secondary MOS Crew Chief. To alleviate inventory shortages of primary MOS crew chiefs, authority is granted to individual unit commanders to train and designate personnel as secondary MOS 6172 only. The source population is restricted to personnel that are qualified as aerial gunner/observers from within the 61XX occupational field. Waivers for other MOSs may be requested via CMC (ASM) on a case by case basis.

(1) The number of secondary MOS crew chiefs that an individual unit commander is authorized to designate at any time is limited to the current staffing formula, 1.6 CC X PAA= #CC, minus primary designated crew chiefs assigned. On-hand primary MOS crew chiefs shall have priority for crewmember orders and hazardous duty incentive pay.

(2) Secondary MOS crew chiefs shall complete normal NATOPS requirements to include flight physical, physiology, and water survival prior to flight. Consideration should be made for SERE training.

(3) Secondary MOS crew chiefs shall fly those flights designated by an "O" in the Combat Capable phase of training. When the "O" coded events within the Combat Ready, Combat Qualification, and Full Combat Qualification phases of training are complete, the CCUI may be credited with the CRP from the entire phase of training.

(4) Prior to designation by the unit commander, the respective FRS instructor or MAG Crew Chief NATOPS Standardization Evaluators shall certify the individual’s qualification to ensure MOS standardization. This certification shall include an open and closed book NATOPS exam, oral evaluation and a flight evaluation. Evaluation standards applicable to the primary 6172 MOS shall be strictly adhered to. A Combat Capable NVG Stage evaluation flight shall be completed by the parent unit ENSI prior to the certification flight.

(5) Copies of all certification evaluations, NAVFLIRS, and OPNAV Form 3710/7 shall be forwarded to HMM(T)-164 for post certification review. The primary purpose of this review is to assist the model manager in tracking the

certification process and identifies positive/negative trends in the training process.

c. Refresher Syllabus. The Refresher syllabus is predicated on the experience of the Refresher crew chief or aerial gunner/observer. A Refresher crew chief or aerial gunner/observer need not fly every event within a stage of training to be requalified in that stage. A crew chief or aerial gunner/observer in the Refresher syllabus should fly all "R" coded events. The commanding officer may tailor the Refresher syllabus to fit the experience of the Refresher crew chief or aerial gunner/observer per T&R Manual, Administrative. When the "R" coded events within a stage of training are complete, the crew chief or aerial gunner/observer may be credited with the CRP for the entire stage of training. This assumes that the Refresher has previous proficiency in that stage of training. If the Refresher crew chief or aerial gunner/observer has no previous proficiency in a stage or particular event, then the Refresher shall fly the entire stage or all events not previously flown.

4. Refly Interval. Figure 2-1 shows refly interval and CRP for the 6172 MOS, and Figure 2-2 shows the refly interval and CRP for the aerial gunner/observer.

5. Crew Resource Management (CRM). CRM shall be briefed for all flights and/or events.

231. COMBAT CAPABLE PHASE

1. Familiarization (FAM)

a. Purpose. To develop preliminary skills as a crew chief in the CH-46E and become familiar with flight characteristics, aircraft systems, limitations, and emergency procedures. To develop proficiency in assisting pilots in all aspects of FAM flight, both day and night.

b. General

(1) These flights may be flown with any flight of the basic pilot POI.

(2) On FAM-109 the CCUI will act as an observer. Subsequent to FAM-109 the CCUI will act in the capacity of crew chief.

c. Crew Requirement. CCI/CCUI.

d. Ground/Academic Training. Prior to FAM-110, Aviation Physiology and flight physical, swim qualifications, and applicable ground training must be completed.

e. Flight Training. (4 Flights, 6.5 Hours).

FAM-109 1.5 T,C E 1 CH-46E A

Goal. Introduce ground and normal flight procedures.

Requirement

(1) Discuss

(a) Use of ICS.

(b) Standard terminology.

(c) Voice procedures.

(d) Interaction with pilots.

(e) Lookout doctrine.

(f) Estimating distances.

(g) Emergency procedures.

(h) Fuel surveillance.

(i) Crew comfort levels.

(j) Vertigo.

(k) Takeoff and landing emergencies.

(l) CRM.

1 Communication.

2 SA.

(2) Introduce

(a) Basic crew duties.

(b) Daily/turnaround inspections.

(c) Servicing requirements.

(d) Startup/shutdown procedures.

(e) Hotseat procedures.

(f) Takeoff.

(g) Operation of communications equipment.

(h) Inflight lookout.

(i) Headwork.

(j) Aft station check procedures.

(k) Aircraft fueling procedures.

(l) Crew comfort levels.

(m) Depth perception.

(n) Taxiing/directing procedures.

(o) Back taxi procedures.

(3) Review

(a) Limitations.

(b) SOPs.

(c) Crew chief duties.

(d) Startup/shutdown procedures.

(e) Aircraft security: Ship/shore based procedures.

Performance Standards. Exhibit basic understanding of CH-46E aircrew duties.

Prerequisite

(a) CRM.

(b) Completion of plane captain oral sign-offs.

Ordnance. None.

External Syllabus Support. None.

FAM-110 1.5 T,C,O E 1 CH-46E A

Goal. Introduce communications, passenger briefing, normal and emergency procedures.

Requirement

(1) Discuss

(a) Standard terminology.

(b) Interaction with pilots.

(c) Takeoff and landing emergencies.

(d) Engine limitations.

(e) Transmission limitations.

(f) Inflight fire.

(g) Smoke elimination.

(h) CRM.

1 SA.

2 Leadership.

(i) Ditching procedures.

(2) Introduce

(a) Precautionary landings.

(b) Emergency landings.

(c) Autorotations.

(d) SA.

(e) Ground handling procedures.

(f) Crew chief responsibilities during loading.

(g) T&R Manual, Administrative.

(h) Aft station check procedures.

(3) Review

(a) ICS usage.

(b) Taxi procedures.

(c) Station check procedures.

(d) Hot fuel procedures.

Performance Standards. Demonstrate application of crew chief duties.

Prerequisite. FAM-109.

Ordnance. None.

External Syllabus Support. None.

FAM-117 1.5 T,C E 1 CH-46E A N

Goal. Introduce night operations.

Requirement

(1) Discuss

(a) Lighting systems.

(b) Night operations.

(c) Estimating distances.

(d) CRM.

1 Adaptability/flexibility.

2 Decision making.

(2) Introduce

(a) Daily at night.

(b) Turnaround at night.

(c) Light discipline.

(d) Aircraft lighting.

(e) Airfield lighting.

(f) Night lookout doctrine.

(3) Review

(a) Night precautionary Landings.

(b) Night emergency landings.

(c) Overview of duties.

(d) SA.

(e) Night startup/shutdown procedures.

(f) Limitations.

(g) Hotseat procedures.

Performance Standards. Demonstrate a basic knowledge of night operations IAW NATOPS.

Prerequisite. FAM-110.

Ordnance. None.

External Syllabus Support. None.

FAM-119 2.0 T,C E 1 CH-46E A N NS

Goal. Introduce NVD flight.

Requirement

(1) Discuss

(a) Crew comfort levels.

(b) NVD failures.

(c) Depth perception.

(d) Aircraft lighting.

(e) Emergency procedures.

(f) CRM.

1 Mission analysis.

2 Assertiveness.

(2) Introduce

(a) Use of NVDs during low level operations.

(b) Aircraft configuration.

(c) Taxiing on NVDs.

(d) Use of NVDs at an unlit field.

(e) Ground relationships.

(3) Review

(a) Communication.

(b) Lookout doctrine.

(c) Night startup/shutdown.

(d) Aircraft lighting.

(e) Taxiing signals.

(f) Light discipline.

(g) Crew duties.

(h) Vertigo.

Performance Standards. Apply basic NVD skills as outlined in the MAWTS-1 NVD manual.

Prerequisite. Completion of NITE Lab and FAM-117.

Ordnance. None.

External Syllabus Support. None.

2. Navigation (NAV)

a. Purpose. To familiarize the CCUI with navigation responsibilities while navigating primarily using charts and maps.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist the pilots in all aspects of navigation.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS Navigation class.

e. Flight Training. (2 Flights, 3.0 Hours).

NAV-130 1.5 T,C E 1 CH-46E A (N)

Goal. Introduce flight duties during navigation.

Requirement

(1) Discuss

(a) Fuel management checks.

(b) Crew participation.

(c) CRM.

1 Communication.

2 Decision making.

(2) Introduce

(a) Use of appropriate maps and checkpoints.

(b) Time distance checks.

(c) Barrier features.

(d) Prominent terrain features.

(e) Additional crew chief responsibilities over unfamiliar terrain.

(f) Navigation procedures.

(3) Review

(a) Communication.

(b) SA.

(c) Night startup/shutdown.

(d) Aircraft lighting.

(e) Taxiing at night.

(f) Light discipline.

(g) Crew duties.

(h) Night lookout doctrine.

Performance Standards. Demonstrate ability to assist the pilots during navigation.

Prerequisite. FAM-110 (if flown at night, FAM-117).

Ordnance. None.

External Syllabus Support. None.

NAV-133 1.5 T,C E 1 CH-46E A N NS

Goal. Introduce flight duties during NVD navigation.

Requirement

(1) Discuss

(a) Fuel management checks.

(b) Crew comfort Levels.

(c) NVD failures.

(d) Emergency procedures.

(e) CRM.

1 Adaptability/flexibility.

2 Mission analysis.

(2) Introduce

(a) Additional crew chief responsibilities over unfamiliar terrain on NVDs.

(3) Review

(a) Use of appropriate maps and checkpoints.

(b) Time distance checks.

(c) Barrier features.

(d) Prominent terrain features.

(e) Assisting pilots.

(f) Light discipline.

(g) Aft station checks.

Performance Standards. Demonstrate ability to assist pilots during NVD navigation.

Prerequisite. FAM-119 and NAV-130.

Ordnance. None.

External Syllabus Support. None.

3. Confined Area Landings (CAL)

a. Purpose. To develop crew chief responsibilities during CALs.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist in all aspects of CALs.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS CAL class.

e. Flight Training. (2 Flights, 3 Hours).

CAL-141 1.5 T,C E 1 CH-46E A

Goal. Introduce CAL responsibilities.

Requirement

(1) Discuss

(a) Obstacle clearance.

(b) Standard terminology.

(c) Crew comfort levels.

(d) Clearance in confined areas.

(e) Emergencies during low level operations.

(f) CRM.

1 Assertiveness.

2 Leadership.

(2) Introduce

(a) Aircraft clearance while operating in confined areas.

(b) Terrain suitability.

(c) Main-mount landings.

(d) Slope landings.

(e) Waveoff.

(f) Low level operations.

(3) Review

(a) Crew responsibilities.

(b) Clearance calls.

Performance Standards. Demonstrate the ability to successfully crew the aircraft to the deck for a minimum of five landings.

Prerequisite. FAM-110.

Ordnance. None.

External Syllabus Support. Various CAL sites.

CAL-142 1.5 T,C,O E 1 CH-46E A N NS

Goal. Introduce NVD CALs.

Requirement

(1) Discuss

(a) Obstacle clearance.

(b) Task saturation.

(c) Crew comfort levels.

(d) Waveoff.

(e) Distance estimation.

(f) Clearance in confined areas.

(g) Emergency procedures.

(h) CRM.

1 SA.

2 Assertiveness.

(2) Introduce

(a) LZ lighting.

(b) Aircraft clearance on NVDs.

(c) LZ suitability.

(3) Review

(a) Headwork.

(b) Crew responsibilities.

(c) Light discipline.

(d) Clearance calls.

(e) NVD failures.

(f) Depth perception.

Performance Standards. Demonstrate the ability to successfully call the aircraft to the deck utilizing NVDs a minimum of five times using standardized terminology.

Prerequisite. FAM-119 and CAL-141.

Ordnance. None.

External Syllabus Support. CAL sites suitable for NVD use.

4. Formation (FORM)

a. Purpose. To familiarize the CCUI with functions and responsibilities during formation flying.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist pilots in all aspects of formation flight.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS Formation Flying class.

e. Flight Training. (2 Flights, 3 Hours).

FORM-151 1.5 T,C E 2 CH-46E A

Goal. Introduce formation flight/section CAL responsibilities.

Requirement

(1) Discuss

(a) Lost communications procedures.

(b) Crew chief responsibilities during inadvertent IMC.

(c) CRM.

1 Communication.

2 Leadership.

(2) Introduce

(a) Lookout procedures for wingman.

(b) Turn patterns.

(c) Breakup and rendezvous.

(d) Section takeoffs and landings to an unimproved surface.

(3) Review

(a) Crew responsibilities.

(b) SA.

(c) Distance estimation.

(d) Crew coordination.

(e) Lookout doctrine.

Performance Standards

(a) Maintain SA of wingman throughout evolution.

(b) Demonstrate proper crew chief duties.

(c) Utilize standard terminology.

(d) Demonstrate proper distance estimation within two feet of actual height.

Prerequisite. CAL-141.

Ordnance. None.

External Syllabus Support. Availability of large LZ.

FORM-152 1.5 T,C E 2 CH-46E A

Goal. Review formation flight/section CAL responsibilities.

Requirement

(1) Discuss

(a) Section CALs.

(b) Lookout doctrine.

(c) CRM.

1 Adaptability/flexibility.

2 Assertiveness.

(2) Introduce. Section takeoffs and landings to an approved surface.

(3) Review

(a) Obstacle clearance.

(b) SA.

(c) Terrain suitability.

(d) Crew coordination.

(e) Wingman responsibilities.

Performance Standards

(a) Maintain SA of wingman throughout evolution.

(b) Demonstrate proper crew chief duties.

(c) Utilize proper terminology.

(d) Demonstrate proper distance estimation within two feet of actual height.

Prerequisite. CAL-151.

Ordnance. None.

External Syllabus Support. Availability of large LZ.

5. External Loads (EXT)

a. Purpose. To develop CCUI skills necessary for external cargo operations.

b. General. At the completion of this stage, the CCUI will be able to demonstrate the ability to assist the pilot during day external operations.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. Review of NAVAIR 01-250-HDA-9.

e. Flight Training. (1 Flight, 1.5 Hours).

EXT-161 1.5 T,C,O E 1 CH-46E A

Goal. Introduce external cargo operations.

Requirement

(1) Discuss

(a) Standard terminology.

(b) Static discharge precautions.

(c) Lost communications.

(d) Hand signals.

(e) Emergency procedures.

(f) Emergency release procedures.

(g) Crew duties.

(h) CRM.

1 Decision making.

2 Communication.

(2) Introduce

(a) Communications.

(b) External operations.

(c) Hook and pendant preflight.

(d) Load release procedures.

(3) Review

(a) Obstacle clearance.

(b) SA.

Performance Standards

(a) Properly configure aircraft.

(b) Successfully complete five pickups and dropoffs.

(c) Demonstrate standard terminology.

(d) Execute proper safety precautions.

Prerequisite. CAL-110.

Ordnance. None.

External Syllabus Support. External load.

5. Terrain Flight (TERF)

a. Purpose. To introduce the CCUI to TERF maneuvers and to emphasize the importance of crew coordination, crew comfort level, and standard terminology.

b. General. At the completion of this stage of flight, the CCUI will be able to demonstrate the ability to assist the pilots during day TERF maneuvers.

c. Crew Requirement. CCI/CCUI.

d. Academic Training. FRS TERF class.

e. Flight Training. (1 Flight, 1.5 Hours).

TERF-171 1.5 T,C,O E 1 CH-46E A

Goal. Introduce TERF maneuvers.

Requirement

(1) Discuss

(a) Obstacle clearance.

(b) Standard terminology.

(c) Crew comfort levels.

(d) Waveoff.

(e) Clearance in confined areas.

(f) Emergencies during low level operations.

(g) CRM.

1 Assertiveness.

2 Communication.

(2) Introduce

(a) Blade walk.

(b) Hover check theory.

(c) TERF maneuvers.

1 Bunts.

2 Rolls.

3 Masking and unmasking.

4 Spiral approach.

5 Low level quick stop.

6 Zoom climb.

(3) Review

(a) Crew responsibilities.

(b) Clearance calls.

Performance Standards. Demonstrate a basic understanding of TERF maneuvers.

Prerequisite. CAL-141.

Ordnance. None.

External Syllabus Support. Low level TERF area in controlled airspace.

6. Crew Chief Evaluation (CCX)

a. Purpose. To review all duties and emergency procedures of a Combat Capable crew chief per this syllabus and NATOPS publications.

b. General

(1) Completion of this stage meets the requirements for designation as a crew chief.

(2) The CCI shall be a designated NATOPS Evaluator and CRM Facilitator/Instructor.

c. Crew Requirement. CCI/CCUI.

d. Academic Training

(1) Completion of open/closed book and 12-week evaluations.

(2) Completion of plane captain syllabus.

e. Flight Training. (2 Flights, 3.5 Hours).

RVW-181 1.5 T,C E 1 CH-46E A (N)(NS)

Goal. Review duties, limitations, responsibilities, taxiing procedures, and emergency procedures.

Requirement

(1) Discuss

(a) Preparation.

(b) Time management.

(c) Daily/turnaround procedures.

(d) Startup/shutdown.

(e) Taxi procedures.

(f) Back taxi procedures.

(g) Application of CRM.

(2) Introduce

(a) Total crew chief responsibility for the aircraft.

(b) Plane captain responsibilities.

(3) Review

(a) Crew/passenger brief.

(b) Aircraft configuration.

(c) Emergency procedures.

(d) Limitations.

(e) ICS usage.

(f) Estimating distances.

(g) Safety precautions.

(h) Systems knowledge.

(i) Crew duties.

(j) Lookout doctrine.

Performance Standards. Demonstrate proficiency as a crew chief as stated in the NATOPS and OPNAV 3710.7.

Prerequisite. All prior 100-level flights.

Ordnance. None.

External Syllabus Support. None.

CCX-182 2.0 T,C,O E 1 CH-46E A (N)(NS)

Goal. Evaluate CCUI's systems knowledge of the CH-46E and the capability to perform duties as a Combat Capable crew chief.

Requirement

(1) Discuss

(a) Preparation.

(b) Time management.

(c) Daily/turnaround procedures.

(d) Taxi procedures.

(e) Aircraft systems.

(2) Introduce. N/A.

(3) Review

(a) Crew/passenger brief.

(b) Aircraft configuration.

(c) Emergency procedures.

(d) Limitations.

(e) ICS usage.

(f) Estimating distances.

(g) Safety precautions.

(h) Systems knowledge.

(i) Crew duties.

(j) Lookout doctrine.

Performance Standards. Demonstrate proficiency as a crew chief as stated in the NATOPS and OPNAV 3710.7.

Prerequisite. All prior 100-level flights.

Ordnance. None.

External Syllabus Support. None.

232. COMBAT READY PHASE

1. Familiarization (FAM)

a. Purpose. To enhance skills of crew functions and responsibilities during day or night flights.

b. General

(1) At the completion of this stage, the CC/AOUI will demonstrate the ability to assist the entire crew during day or night flights.

(2) FAM-201 is the initial FAM flight for the AOUI.

c. Crew Requirement. CC, CC/CCUI or CC/AOUI.

d. Ground/Academic Training. Prior to beginning this stage, the CCUI or AOUI shall receive Tactical Aircrew Coordination and Responsibilities training from the MAWTS-1 ASP.

e. Flight Training. (1 Flight, 1.5 Hours).

FAM-201 1.5 C,R 1 CH-46E A (N)

Goal. Develop lookout doctrine during FAM flights.

Requirement

(1) Discuss

(a) Lookout responsibilities.

(b) ICS procedures.

(c) SA.

(d) CRM.

(e) Crew comfort levels.

(2) Introduce. Assisting the pilot during FAM operations.

(3) Review. Standard terminology and lookout doctrine.

Performance Standards. Demonstrate proper lookout doctrine and CRM.

Prerequisite. Tactical Aircrew Considerations and Responsibilities class from the MAWTS-1 ASP.

Ordnance. None.

External Syllabus Support. Landing areas.

2. Confined Area Landings (CAL)

a. Purpose. To develop crew coordination during confined area operations.

b. General. At the completion of this stage, the CC/AOUI will be able to demonstrate the ability to assist the pilots in day CALS.

c. Crew Requirement. CC, CC/CCUI or CC/AOUI.

d. Ground/Academic Training. None.

e. Flight Training. (3 Flights, 4.5 Hours).

CAL-211 1.5 C 1 CH-46E A C

Goal. Review single aircraft CAL operations; develop skills with tactical approaches and departures.

Requirement

(1) Discuss

(a) CRM.

(b) Obstacle clearance.

(c) Standard terminology.

(d) Distance estimation.

(e) Low altitude emergencies (i.e. landing in trees).

(f) Rotor blade clearances (blade walk).

(g) LZ evaluation.

(h) Waveoff/brownout procedures.

(2) Review

(a) Lookout doctrine.

(b) ICS procedures.

(c) Aircraft clearance and terrain suitability.

(d) Distance estimation.

Performance Standards. Demonstrate the ability to clear the aircraft into confined areas for landings.

Prerequisite. FAM-201.

Ordnance. None.

External Syllabus Support. CAL zone.

CAL-212 1.5 C,R,O 2 CH-46E A (N) C,R

Goal. Conduct section CAL operations.

Requirement

(1) Discuss

(a) CRM.

(b) Lookout doctrine.

(c) Obstacle clearance.

(d) Distance estimation.

(e) Wingman position.

(f) Waveoff/brownout procedures.

(2) Introduce. Crew responsibilities during section CAL operations.

(3) Review. Formation and lookout procedures emphasizing responsibilities during section operations.

Performance Standards. Demonstrate aircrew responsibilities during section CALS.

Prerequisite. CAL-211 (if flown at night, CAL-213).

Ordnance. None.

External Syllabus Support. CAL zone.

CAL-213 1.5 C,R,O 1 CH-46E A N

Goal. Review unaided night CALs.

Requirement

(1) Discuss

(a) CRM.

(b) Obstacle clearance.

(c) Common terminology.

(d) Distance estimation.

(e) Waveoff/brownout procedures.

(2) Review

(a) Lookout doctrine.

(b) ICS procedures.

(c) Aircraft clearance and terrain suitability.

(d) Night operations.

(e) Aircraft lighting and light discipline.

Performance Standards. Demonstrate aircrew responsibilities during night unaided CALs.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. CAL zone.

3. External Cargo Operations (EXT)

a. Purpose. To develop proficiency with external cargo operations and introduce external cargo operations in confined areas with close coordination of a Helicopter Support Team (HST).

b. General. At the completion of this stage, the CC/AOUI will be able to demonstrate the ability to assist the pilot in day external cargo operations from confined areas. CRM shall be discussed as applicable to each event.

c. Crew Requirement. CC, CC/CCUI.

d. Ground/Academic Training. Read appropriate chapters of the NATOPS Manual and NWP 3-22.5-CH-46E.

e. Flight Training. (1 Flight, 1.5 Hours).

EXT-221 1.5 C,R,O 1 CH-46E A

Goal. Conduct external load operations to a confined area.

Requirement

(1) Discuss

(a) CRM.

(b) Communication procedures.

(c) Aircraft emergencies during external operations.

(d) Load jettison procedures.

(e) Capabilities and limitations of the hook.

(f) Cargo hook preparation.

(g) Standard terminology.

(h) Lost communication procedures/hand signals.

(2) Introduce. HST procedures.

(3) Review. N/A.

Performance Standards. Demonstrate the ability to give commands to the pilot at the controls of the aircraft to effect hookup and delivery with minimal difficulty utilizing standard terminology while maintaining obstacle clearance.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. HST, external load and pickup/drop zone.

4. Formation Flight (FORM)

a. Purpose. To review formation and introduce tactical formation maneuvering.

b. General. At completion of this stage, the CC/AOUI will demonstrate the ability to assist the pilot during day or night formation flight operations. CRM shall be discussed as applicable to each event.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Ground/Academic Training. Review tactical formations as listed in the NWP 3-22.5-CH-46E, MAWTS-1 ASP, and DM Guide.

e. Flight Training. (1 Flight, 1.5 Hours).

FORM-231	1.5	C,R 2 CH-46E A	C,R

Goal. Review formation and introduce tactical formation maneuvering.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Lead changes.

(d) Standard terminology.

(e) Tactical formation maneuvering.

(f) Aircraft clearance.

(g) Appropriate formation maneuvers against a F/W threat, R/W threat, IR missile threat, radar guided missile threat, and AAA threat.

(h) Intra and inter aircraft communications.

(i) Distance estimation.

(2) Introduce

(a) Break turns, center turns, pinch/dig, cover, TAC turns, in-place turns, and cross turns.

(b) Combat spread and combat cruise formations.

(3) Review

(a) Lookout procedures.

(b) Communication procedures.

Performance Standards. Demonstrate the ability to perform and understand TAC FORM maneuvering.

Prerequisite. FAM-201.

Ordnance. None.

External Syllabus Support. None.

5. Terrain Flight (TERF)

a. Purpose. To qualify the CC/AGOUI in TERF and TERF navigation and to emphasize the importance of crew coordination, crew comfort level, and standard terminology.

b. General

(1) An Enlisted TERFI (ETERFI) is required for this stage of instructional flight.

(2) Successful completion of TERF-243 constitutes TERF qualified. A qualification letter signed by the commanding officer stating the CC/AGOUI is TERFQ is required. The original shall be placed in the CC/AGOUI NATOPS jacket, and a copy in the APR with a corresponding logbook entry.

(3) T&R Manual, Administrative establishes TERF altitude restrictions and currency requirements.

c. Crew Requirement. CC/AO, ETERFI/CCUI or ETERFI/AOUI.

d. Ground/Academic Training

(1) CH-46 Crew Chief Terrain Flight (TERF) Course, listed in the MAWTS-1 Course Catalog prior to beginning this stage of training.

(2) Familiarity with NWP 3-22.5-CH-46E and T&R Manual, Administrative.

e. Flight Training. (3 Flights, 4.5 Hours).

TERF-241 1.5 1 CH-46E A

Goal. TERF maneuvers.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Obstacle clearance.

(d) Lookout doctrine.

(e) Emergencies during low level operations.

(f) TERF maneuvers.

(g) Differences between TERF flight regimes.

(2) Introduce. TERF maneuvers.

(3) Review. TERF maneuvers and aircraft clearance.

Performance Standards. Demonstrate knowledge of TERF maneuvers in tactical situations.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. TERF area (restricted area preferred).

TERF-242 1.5 R 1 CH-46E A

Goal. Assist the pilots in navigation of a TERF route in the low level and contour profile.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort level.

(c) Communication.

(d) Map/NAV procedures.

(e) Terrain recognition.

(f) Obstacle clearance.

(2) Introduce. Assist pilots in navigation, use of checkpoints, barrier features and prominent terrain features.

(3) Review. Map/Nav procedures and emergency procedures during low level operations.

Performance Standards. Assist pilots in navigation of a minimum of five checkpoints at or below 200’ AGL remaining oriented on route within 500 meters.

Prerequisite. TERF-241.

Ordnance. None.

External Syllabus Support. TERF route (restricted area preferred).

TERF-243 1.5 C,R,O 2 CH-46E A C,R

Goal. Review TERF/Nav procedures and demonstrate the ability to navigate a TERF route in the contour and low level profiles. TERF evaluation/review.

Requirement

(1) Discuss

(a) CRM.

(b) CC/AO responsibilities during low altitude flight.

(c) Communication.

(d) Navigational assistance.

(e) Lookout doctrine.

(f) Low altitude emergency procedures.

(g) Multi-aircraft operations.

(h) Threat awareness.

(i) Lead changes.

(j) Tactical formation maneuvering.

(k) Crew comfort level.

(l) Map and navigation procedures.

(2) Review. TERF-241 and TERF-242.

Performance Standards. Demonstrate knowledge of terrain flight as it applies to the CH-46E and assist pilots in navigation of a minimum of five checkpoints at or below 200' AGL remaining oriented on route within 500 meters.

Prerequisite. TERF-242.

Ordnance. None.

External Syllabus Support. TERF route (restricted area preferred).

6. Night Vision Devices (NVD), High Light Level (HLL)

a. Purpose. To develop skill in the use of NVDs under light levels greater than .0022 lux (HLL)) as predicted by the computer generated light level calendar and to qualify the CC/AO in NVD (HLL) operations.

b. General

(1) All initial and Refresher flights require a Enlisted Night Systems Instructor (ENSI).

(2) Successful completion of NVD-257 constitutes Night Systems Qualified (NSQ)(HLL). A qualification letter, signed by the commanding officer stating the CC/AOUI is NSQ (HLL) is required to be qualified to carry troops under HLL conditions. The original shall be placed in the CC/AOUI's NATOPS jacket, and a copy in his APR with a corresponding logbook entry.

c. Crew Requirement. CC/AO, ENSI/CCUI or ENSI/AOUI.

d. Prerequisite. CAL-211.

e. Academic Training. CH-46 Night Systems Operations Course as listed the MAWTS-1 Course Catalog shall be completed prior to conducting NVD flights.

f. Flight Training. (7 Flights, 10.5 Hours).

NVD-251 1.5 C,R,O 1 CH-46E A N NS C,R

Goal. Introduce NVD single aircraft CALs in HLL.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) NVD use and limitations.

(d) NVD failures.

(e) Emergencies.

(f) Inadvertent IMC.

(g) Aircraft lighting.

(h) Light discipline

(i) Use of IR searchlight.

(j) Depth perception.

(k) Obstacle clearance.

(2) Introduce. CALs at various unlit CAL sites.

(3) Review. CAL-211.

Performance Standards. Demonstrate the ability to conduct CALs under HLL conditions.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. NVD landing zones.

NVD-252 1.5 C 2 CH-46E A N NS C

Goal. Conduct NVD formation flight in HLL.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Lead changes.

(d) Aircraft lighting.

(e) Closure rate.

(f) Distance estimation.

(g) NVD procedures and emergencies.

(h) Relative motion and depth perception problems at night.

(i) Lookout doctrine.

(2) Introduce. NVD formation flight.

(3) Review. FORM-231.

Performance Standards. Demonstrate the ability to conduct formation flight while utilizing NVDs.

Prerequisite. FORM-231 and NVD-251.

Ordnance. None.

External Syllabus Support. None.

NVD-253 1.5 C,R,O 2 CH-46E A N NS C,R

Goal. Introduce section NVD tactical section approaches, landings, and departures to a confined area in HLL.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) NVD navigation techniques.

(d) NVD failures.

(e) Emergencies.

(f) Inadvertent IMC.

(g) Aircraft lighting.

(h) Use of IR searchlight.

(i) Depth perception.

(j) Obstacle clearance.

(2) Review. Section takeoffs/landings at various unlit CAL sites.

Performance Standards. Demonstrate the ability to conduct section CALs while utilizing NVDs.

Prerequisite. CAL-212 and NVD-252.

Ordnance. None.

External Syllabus Support. NVD landing zones.

NVD-254 1.5 C,R 3 OR MORE ACFT A N NS C,R

Goal. Conduct NVD division formation and CALs.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) NVD division takeoffs and landings.

(d) NVD formation techniques.

(e) Inadvertent IMC.

(f) Obstacle clearance.

(g) Lookout doctrine.

(h) Standard terminology.

(2) Introduce. NVD division CALs.

(3) Review. NVD-253.

Performance Standards. Demonstrate the ability to conduct NVD division CALs under HLL conditions.

Prerequisite. NVD-253.

Ordnance. None.

External Syllabus Support. NVD landing zones.

NVD-255 1.5 1 CH-46E A N NS

Goal. Conduct NVD TERF navigation.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Obstacle clearance.

(d) Lookout doctrine.

(e) NVD navigation techniques.

(f) Emergencies during low level operations.

(2) Introduce. NVD TERF NAV procedures.

(3) Review

(a) Map, orientation, and NVD navigation techniques.

(b) Navigation along a predetermined route of at least five checkpoints remaining oriented along the route.

Performance Standards. Demonstrate the ability to assist the pilots in navigation of a minimum of five checkpoints remaining oriented on route within 500 meters while utilizing NVDs.

Prerequisite. TERF qualified and NVD-251 complete.

Ordnance. None.

External Syllabus Support. NVD TERF route (restricted area preferred).

NVD-256 1.5 C,R,O 2 CH-46E A N NS C,R

Goal. Conduct NVD TERF formation flight.

Requirement

(1) Discuss

(a) Crew comfort levels.

(b) CRM.

(c) NVD navigation techniques.

(d) NVD formation techniques.

(e) Emergency procedures during night low level operations.

(f) NVD failures.

(g) Inadvertent IMC.

(h) Lookout doctrine.

(2) Introduce. NVD TERF NAV.

(3) Review

(a) NVD formation techniques to include parade position, cruise principles, crossovers, breakup and rendezvous and lead changes.

(b) NVD navigation techniques.

Performance Standards. Demonstrate the ability to assist the pilots in navigation of a minimum of five checkpoints at or below 200’ AGL remaining oriented on route within 500 meters while utilizing NVDs.

Prerequisite. TERF qualified, NVD-252 and 255.

Ordnance. None.

External Syllabus Support. NVD TERF route (restricted area preferred).

NVD-257 1.5 C,R,O 2 CH-46E A N NS C,R

Goal. Conduct/evaluate NVD TERF formation, navigation, and section CALs.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Tactical formations.

(d) NVD procedures and emergencies.

(e) Aircraft lighting.

(f) NVD navigation techniques.

(g) Low altitude emergencies.

(h) Inadvertent IMC.

Performance Standards. Demonstrate the ability to conduct NVD HLL TERF, navigation, formation flight, and CALS in a HLL environment.

Prerequisite. NVD-254, 255, and 256.

Ordnance. None.

External Syllabus Support. NVD landing zones and approved TERF route (restricted area preferred).

7. Air-to-Ground (AG)

a. Purpose. To develop proficiency/CRM skills with crew served weapons and aerial gunnery procedures.

b. General

(1) Initial instructional flights shall be conducted by a designated EWTI or AGI.

(2) At the completion of this stage, the aircrew will demonstrate knowledge of weapons systems and proficiency during day weapons delivery.

c. Crew Requirement. CC/AG, AGI/CCUI or AGI/AGOUI.

d. Ground/Academic Training

(1) Academic training will be conducted by a EWTI or AGI.

(2) CH-46 Crew Member Aerial Gunnery Academic Course, using the MAWTS-1 ASP. Courses are listed in the MAWTS-1 Course Catalog.

e. Simulator/Flight Training. (1 event, 1.5 Hours, 3 Flights, 4.5 Hours).

SAG-280 1.5 C S

Goal. Introduce the CCUI/AGUI to aerial gunnery procedures.

Requirement

(1) Discuss

(a) CRM.

(b) ICS procedures.

(c) Safety.

(d) Weapons conditions.

(e) Weapons commands.

(f) Weapons malfunctions/stoppages/emergencies.

(g) Crew served weapons checklist application.

(h) Muzzle awareness.

(i) Weapons preparation/nomenclature.

(2) Introduce. Day aerial gunnery while firing on pre-briefed targets.

(3) Review. MAWTS-1 Aerial Gunnery Manual and CH-46E Tactical Manuals.

Performance Standards. Demonstrate the ability to conduct day aerial gunnery.

Prerequisite. Aerial Gunnery Academic Course as listed in the MAWTS-1 ASP.

Ordnance. None.

External Syllabus Support. Crew served weapons trainer.

AG-281 1.5 C 1 CH-46E A C

Goal. Introduce the CCUI/AGOUI to aerial gunnery procedures.

Requirement

(1) Discuss

(a) CRM.

(b) ICS procedures.

(c) Safety.

(d) Weapons conditions.

(e) Weapons commands.

(f) Weapon malfunctions/emergencies.

(g) Crew served weapons checklist.

(h) Aiming techniques.

(i) Muzzle awareness.

(j) Weapons preparation/nomenclature.

(2) Introduce

(a) Preparation of weapons and aircraft.

(b) Aerial gunnery employment.

(c) Firing on pre-briefed targets.

(3) Review. MAWTS-1 Aerial Gunnery Manual.

Performance Standards. Demonstrate the ability to properly employ the .50 cal weapon during day aerial gunnery.

Prerequisite. SAG-280.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. Appropriate aerial gunnery range.

AG-282	1.5	C,R	2 CH-46E	A	C,R

Goal. Introduce multi-aircraft weapons employment considerations.

Requirement

(1) Discuss

(a) CRM.

(b) ICS procedures.

(c) Safety.

(d) Weapons conditions.

(e) Weapons commands.

(f) Weapon malfunctions/emergencies.

(g) Crew served weapons checklist.

(h) Aiming techniques.

(i) Muzzle awareness.

(j) Weapons preparation/nomenclature.

(k) Formation flight during aerial gunnery.

(2) Introduce

(a) Multi-aircraft operations.

(b) Sectors of fire.

(c) Firing on pre-briefed targets while aircraft is maneuvering to include running, diving, and hover fires.

(3) Review

(a) Preparation of weapons and aircraft.

(b) Aerial gunnery procedures.

Performance Standards. Demonstrate ability to properly employ the .50 cal weapon during day aerial gunnery within a section of aircraft.

Prerequisite. AG-281.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. Appropriate aerial gunnery range.

AG-283 1.5 C,R,O 2 CH-46E A C,R

Goal. Introduce aerial gunnery against a moving target.

Requirement

(1) Discuss

(a) CRM.

(b) ICS procedures.

(c) Safety.

(d) Weapons conditions.

(e) Weapons commands.

(f) Weapons malfunctions/emergencies.

(g) Crew served weapons checklist.

(h) Aiming techniques.

(i) Muzzle awareness.

(j) Weapons preparation/nomenclature.

(k) Mil sight values/range estimation.

(l) Lead techniques.

(2) Introduce

(a) Preparation of weapons and aircraft.

(b) Aerial gunnery against a moving target.

(c) Firing on pre-briefed targets.

(d) Lead techniques at a moving target.

(3) Review. MAWTS-1 Aerial Gunner Manual and CH-46E Tactical Manual.

Performance Standards. Demonstrate the ability to employ the weapon at a moving target.

Prerequisite. AG-281.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. Appropriate aerial gunnery range.

8. Carrier Qualification (CQ)

a. Purpose. To qualify the crewmember in day, night unaided, and NVG FCLPs.

b. General

(1) Refer to appropriate LHA/LPH/LHD NATOPS Manual and NWP-42 for carrier operations.

(2) An ENSI is required for initial NVG FCLP flights.

(3) Night CQ Requirements

(a) Requirements for initial/Refresher/delinquent qualification are:

- five day FCLPs.
- five NVG FCLPs.
- five night unaided FCLPs.

(b) Aircrew previously night CQ and proficient per paragraph 3(a) shall complete the following to maintain proficiency:

- two day FCLPs.
- two NVG FCLPs. (Note: CQ-293 chains CQ-292 and CQ-291).
- two night unaided FCLPs. (Note: CQ-292 chains CQ-291).

(4) CQ-293 may be flown under any light level condition. CCUI/AGOUI must be NSQ for appropriate light level.

(5) Aircrew shall discuss CRM as applicable to each event.

c. Crew Requirement

(1) CQ-291 and 292 require CC or CC/CCUI.

(2) CQ-293 requires either CC/AO, ENSI/CCUI, or ENSI/AOUI.

d. Ground/Academic Training. Review appropriate LHA/LPH/LHD NATOPS Manual and NWP-42 for carrier operations.

e. Flight Training. (3 Flights, 3.0 Hours).

CQ-291 1.0 C,R,O 1 CH-46E A

Goal. Conduct day FCLPs.

Requirement

(1) Discuss

(a) CRM.

(b) Communications.

(c) LSE signals.

(d) Landing direction.

(e) Water landings.

(f) Salt encrustation.

(g) Waveoff.

(h) Crew comfort levels.

(i) Lookout doctrine.

(2) Introduce. Day FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. Appropriate LHA/LPH/LHD NATOPS Manual and NWP-42 for carrier operations.

Performance Standards. Demonstrate the ability/knowledge to perform shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. Approved FCLP pad.

CQ-292 1.0 C,R,O 1 CH-46E A N

Goal. Conduct night unaided FCLPs.

Requirement

(1) Discuss

(a) CRM.

(b) Communications.

(c) LSE signals.

(d) NVG procedures/operations.

(e) Aircraft lighting.

(f) Shipboard lighting.

(g) Waveoff.

(h) Crew comfort levels.

(i) Lookout Doctrine.

(2) Introduce. Night unaided FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

(3) Review. CQ-291.

Performance Standards. Demonstrate the ability/knowledge to perform unaided shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CAL-213 and CQ-291.

Ordnance. None.

External Syllabus Support. Approved FCLP pad.

CQ-293 1.0 C,R,O 1 CH-46E A N NS C,R

Goal. Introduce NVD FCLP patterns.

Requirement

(1) Discuss

(a) CRM.

(b) Communications.

(c) LSE signals.

(d) Aircraft lighting.

(e) Waveoff.

(f) Crew comfort levels.

(g) Lookout doctrine.

(h) NVD procedures/operations.

(2) Introduce. NVD FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations. Use LSE light signals if available.

Performance Standards. Demonstrate the ability/knowledge to perform NVD shipboard flight operations to include LSE hand and arm signals.

Prerequisite. NVD-251 and CQ-291.

Ordnance. None.

External Syllabus Support. Approved FCLP pad.

233. COMBAT QUALIFICATION PHASE

1. Carrier Qualification (CQ)

a. Purpose. To train/refresh the CC/AGO in day and NVD CQs.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) Night CQ Requirements

(a) Requirements for initial/Refresher/delinquent qualification are:

- five day CQs.
- five NVD CQs.
- five night unaided CQs.

(b) CC/AGOs previously night carrier qualified and proficient per para 2(a) above shall complete the following to maintain proficiency:

- two day CQs.
- two NVD CQs. (Note: CQ-301 chains CQ-300 and CQ-491)
- two night unaided CQs. (Note: CQ-491 chains CQ-300)

(3) CQ-301 shall be flown under HLL conditions for initial qualification. ENSI required for initial NVD flights. Currency and re-qualification flights may be flown under any light level condition.

(4) CC/AGO is CQ on completion of CQ-300, CQ-301 and CQ-491.

(5) CC/AGOs are authorized to carry passengers during daylight hours when proficient in CQ-300.

(6) CC/AGOs are authorized to carry passengers under all conditions when proficient in CQ-301 and CQ-491.

(7) CC/AGO shall discuss CRM as applicable to each event.

c. Crew Requirement

(1) CQ-300 requires CC or CC/CCUI.

(2) CQ-301 requires either CC/AO, ENSI/CCUI, or ENSI/AOUI.

d. Ground/Academic Training. None.

e. Flight Training. (2 Flights, 2.0 Hours).

CQ-300 1.0 C,R,O 1 CH-46E A

Goal. Conduct day CQ.

Requirement

(1) Discuss

(a) CRM.

(b) Communications.

(c) LSE signals.

(d) Shipboard procedures.

(e) Waveoff.

(f) Crew comfort levels.

(g) Lookout Doctrine.

(h) Emergency procedures during shipboard operations.

(2) Introduce. Day carrier landing procedures.

(3) Review

(a) Day FCLP patterns.

(b) Approaches.

(c) Landings.

(d) Emergency procedures peculiar to shipboard operations.

Performance Standards. Demonstrate the ability/knowledge to perform shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CQ-291.

Ordnance. None.

External Syllabus Support. Air capable ship deck.

CQ-301 1.0 C,R,O 1 CH-46E A N NS C,R

Goal. Conduct NVD CQ.

Requirement

(1) Discuss

(a) CRM.

(b) Communications.

(c) LSE signals.

(d) NVD procedures/operations.

(e) Aircraft lighting.

(f) Shipboard lighting.

(g) Waveoff.

(h) Crew comfort levels.

(i) Lookout doctrine.

(2) Introduce. NVD carrier landings.

(3) Review. NVD FCLP patterns, approaches, landings, and emergency procedures peculiar to shipboard operations.

Performance Standards. Demonstrate the ability/knowledge to perform NVD shipboard flight operations to include LSE hand and arm signals.

Prerequisite. CQ-293 and CQ-300.

Ordnance. None.

External Syllabus Support. NVD capable ship deck.

2. Night Vision Devices (NVD), Low Light Level (LLL)

a. Purpose. To qualify the CC/AGOUI in NVD (LLL) flight operations.

b. General

(1) An ENSI is required for this stage.

(2) Successful completion of NVD-314 constitutes NSQ. A qualification letter signed by the commanding officer stating the CC/AGOUI is NSQ is required to carry troops under any ambient light level condition. The original shall be placed in the CC/AGOUI's NATOPS jacket and APR with a corresponding logbook entry.

(3) Prerequisite

(a) Aircrew must be NSQ (HLL).

(b) All initial/Refresher flights require a ENSI.

(c) Aircrew shall fly all events in light levels less than .0022 lux.

c. Crew Requirement. CC/AO, ENSI/CCUI or ENSI/AOUI.

d. Ground/Academic Training

(1) Appropriate chapters of the MAWTS-1 NVD Manual.

(2) Read appropriate chapters of the NATOPS manual.

(3) Read appropriate paragraphs of the NWP 3-22.5-CH-46E.

e. Flight Training. (4 Flights, 6.0 Hours).

NVD-311	1.5	C,R,O	1	CH-46E	A	N	NS			C,R

Goal. Introduce single aircraft NVD (LLL) CALs.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) NVD failures.

(d) Emergencies.

(e) Inadvertent IMC.

(f) Aircraft lighting.

(g) Distance estimation.

(h) Depth perception.

(i) Effects of LLL environment on NVDs.

(j) Waveoff/brownout procedures.

(2) Introduce. Confined area takeoffs and landings at various unlit CAL sites under LLL conditions.

(3) Review. NVD-251.

Performance Standards. Demonstrate the ability to conduct CALs under LLL conditions.

Prerequisite. NVD-257.

Ordnance. None.

External Syllabus Support. CAL site.

NVD-312	1.5	C,R 2 CH-46E A N NS	C,R

Goal. Introduce NVD (LLL) section CALs.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) NVD navigation techniques.

(d) NVD failures.

(e) Emergencies.

(f) Inadvertent IMC.

(g) Aircraft lighting.

(h) Depth perception.

(i) Distance estimation.

(j) Wingman position.

(k) Waveoff/brownout procedures.

(2) Introduce. LLL section CALS.

(3) Review. Section takeoffs and landings at various unlit CAL sites.

Performance Standards. Demonstrate the ability to conduct section CALs under LLL conditions.

Prerequisite. NVD-311.

Ordnance. None.

External Syllabus Support. CAL site.

NVD-313 1.5 C,R 3 OR MORE ACFT A N NS C,R

Goal. Conduct NVD (LLL) formation and division CALs.

Requirement

(1) Discuss

(a) CRM during NVD (LLL) formation.

(b) Crew comfort level during NVD (LLL) formation operations.

(c) External aircraft lighting considerations during NVD (LLL) formation operations.

(2) Introduce

(a) NVD (LLL) formation.

(b) NVD (LLL) division CALs.

(3) Review. NVD-254.

Performance Standards. Demonstrate the ability to conduct division formation flight and CALs under LLL conditions.

Prerequisite. NVD-312.

Ordnance. None.

External Syllabus Support. CAL sites.

NVD-314 1.5 C,R 2 CH-46E) A N NS C,R

Goal. Conduct NVD (LLL) TERF formation, navigation and section CALS. This flight is the NVD (LLL) evaluation/review for certification as NSQ.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Obstacle clearance.

(d) Lookout doctrine.

(e) NVD navigation techniques.

(f) Emergencies during low level operations.

(g) Depth perception

(h) Distance estimation.

(i) Waveoff/brownout procedures.

(2) Introduce. LLL TERF/NAV.

(3) Review

(a) Map preparation, orientation, and NVD navigation techniques.

(b) Navigation along a predetermined route of at least five checkpoints remaining oriented along the route.

(c) Aircraft operations in an LLL environment.

Performance Standards. Demonstrate the ability to conduct NVD section TERF, NAV, CALs and formation flight in a LLL environment.

Prerequisite. NVD-313.

Ordnance. None.

External Syllabus Support. CAL site and approved NVD navigation route.

3. Air-to-Ground (AG)

a. Purpose. To qualify the CCUI/AOUI with NVD crew served weapon AG procedures.

b. General

(1) Aerial gunnery qualification lectures and initial instructional flights in this stage shall be conducted by a designated EWTI or NSI/AGI.

(2) Successful completion of AG-322 constitutes Aerial Gunnery Qualified (AGQ). A qualification letter signed by the commanding officer stating the CC/AGOUI is AGQ is required. The original shall be placed in the CC/AGOUI's NATOPS jacket and APR with a corresponding logbook entry.

(3) The AGOUI or CCUI must be NSQ for the appropriate light level being flown before flying any NVG aerial gunnery flights.

(4) Laser aiming devices are required for AG-321 and AG-322. If a Laser authorized range is not available, it shall be annotated at the bottom of the ATF.

c. Crew Requirement. CC/AG, ENSI-AGI/CCUI or ENSI-AGI/AGOUI.

d. Ground/Academic Training. Prior to conducting this stage of training, the Laser Safety class from the MAWTS-1 ASP shall be taught.

e. Prerequisite. AG-281, AG-282 and AG-283.

f. Simulator/Flight Training. (1 event, 1.5 Hours, 2 Flights, 3.0 Hours).

SAG-320 1.5 C S

Goal. Introduce the CCUI/AGUI to NVD aerial gunnery procedures.

Requirement

(1) Discuss

(a) CRM.

(b) ICS procedures.

(c) Safety.

(d) Weapons conditions.

(e) Weapons commands.

(f) Weapons malfunctions/stoppages/emergencies.

(g) Crew served weapons checklist application.

(h) Muzzle awareness.

(i) Weapons preparation/nomenclature.

(j) Effects while on NVDs.

(k) Laser aiming devices/procedures.

(2) Introduce. NVD aerial gunnery while firing on pre-briefed targets.

(3) Review. MAWTS-1 Aerial Gunnery Manual and CH-46E Tactical Manuals.

Performance Standards. Demonstrate the ability to conduct NVD aerial gunnery.

Prerequisite. AG-281, 282, and 283.

Ordnance. None.

External Syllabus Support. Crew served weapons trainer.

AG-321 1.5 C 1 CH-46E A N NS C

Goal. Introduce NVD AG gunnery.

Requirement

(1) Discuss

(a) CRM.

(b) ICS procedures.

(c) Safety.

(d) Weapons conditions.

(e) Weapons commands.

(f) Weapons malfunctions/stoppages/emergencies.

(g) Crew served weapons checklist application.

(h) Muzzle awareness.

(i) Weapons preparation/nomenclature.

(j) Effects while on NVDs.

(k) Laser aiming devices/procedures.

(2) Introduce

(a) NVD weapons employment techniques.

(b) Firing on pre-briefed targets while wearing NVDs.

(3) Review. All previous aerial gunnery work.

Performance Standards. Demonstrate knowledge of the cycle of operation, nomenclature, employment of the XM-218 .50 cal machine gun. Demonstrate the ability to fire at pre-briefed targets while utilizing NVDs.

Prerequisite. SAG-320.

Ordnance. 500 rounds .50 cal, laser aiming device.

External Syllabus Support. Laser authorized aerial gunnery range.

AG-322	1.5	C,R,O	2	CH-46E	A	N	NS	C,R

Goal. Demonstrate proficiency with NVD weapons employment in a multi-aircraft flight. This is the aerial gunner evaluation/review flight.

Requirement

(1) Evaluate/Review

(a) ICS procedures.

(b) Safety.

(c) Weapons conditions.

(d) Weapons commands.

(e) Weapons malfunctions/stoppages/emergencies.

(f) Crew served weapons checklist application.

(g) Muzzle awareness.

(h) Weapons preparation/nomenclature.

(i) Effects while on NVDs.

(j) Laser aiming devices/procedures.

(2) Introduce. Firing on pre-briefed targets while aircraft is maneuvering; i.e., running, diving, and hover fires (while wearing NVDs).

(3) Review. AG-321.

Performance Standards. Demonstrate knowledge of ballistics, the cycle of operation, nomenclature and employment of the XM-218 .50 cal machine gun. Demonstrate the ability to fire at pre-briefed targets while utilizing NVDs.

Prerequisite. AG-321.

Ordnance. 500 rounds .50 cal, laser aiming device.

External Syllabus Support. Laser authorized AG range.

4. Electronic Warfare (EW)

a. Purpose. To introduce and develop proficiency in the use of Aircraft Survivability Equipment (ASE) and EW principles.

b. General

(1) Refer to NWP 3-22.5-CH-46E and the NATOPS Manual for EW equipment operating procedures.

(2) At the completion of this stage aircrew will become familiar with operating procedures of onboard ASE and aircraft maneuvers associated with countering EW threats.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Ground/Academic Training

(1) CH-46 Crew Member Electronic Warfare Course as listed in the MAWTS-1 Course Catalog.

(2) Demonstrate familiarity with NWP 3-22.5-CH-46E, CH-46 Tactical Manual, VOL I, VOL II, and MCM 3-1.

(3) Review APR-39, ALE-39, AAR-47, and ALQ-157 operating procedures.

e. Flight Training. (1 Flight, 1.5 Hours).

EW-331	1.5	C,R 1 CH-46E A	C,R

Goal. Introduce basic operations and self-test procedures for ASE.

Requirement

(1) Discuss

(a) Crew coordination.

(b) Crew comfort level.

(c) Communication procedures.

(d) Lookout doctrine.

(e) Threat awareness/threat calls.

(f) Ground and airborne programming of ALE-39 and ALQ-157.

(g) Operation of AAR-47.

(h) Ground threats.

(i) Tactical employment of expendables.

(2) Introduce. ASE against a ground threat.

(3) Review. None.

Performance Standards. Demonstrate basic knowledge of ASE.

Prerequisite. None.

Ordnance. 40 chaff, 20 flares.

External Syllabus Support. EW range, EW emitter, smoke grenades or pyrotechnics.

5. Defensive Measures (DM)

a. Purpose. To develop proficiency in tactics and aerial DM used to evade enemy ground threats.

b. General

(1) Aircrews shall conduct these flights against a threat emitter (HAWK, SA-6, ZSU 23-4, etc.) and shall use ground based threat simulation (smoky SAMs, hand-held pyrotechnics, etc.).

.

(2) Aircrews shall not conduct DM training unless the following requirements are met:

(a) A EDMI is required for all initial instructional flights.

(b) The EDMI shall not have aircrew lookout responsibilities during DM training.

(c) The flight is specifically briefed to include DM training rules per the MAWTS-1 CH-46 DM Guide.

(3) Prerequisite

(a) TERF Qualified.

(b) FORM-231 and EW-331.

c. Crew Requirement. CC/AO, EDMI/CCUI/AO, EDMI/CC/AOUI, EDMI/CCUI/CCUI, EDMI/AOUI/AOUI.

d. Ground/Academic Training

(1) Review applicable chapters of the NWP 3-22.5-CH-46E for ASE and formation maneuvering.

(2) Review appropriate chapters in NATOPS.

(3) Complete the DM academic classes listed in the MAWTS-1 Crew Member ASP prior to DM-341.

(4) Complete Introduction to Helicopter Defensive Measures for Enlisted Aircrews, Aircraft Survivability Equipment, and AN/ALE-39 Systems Brief for Enlisted Aircrews in the MAWTS-1 ASP prior to the first DM flight.

(5) Read appropriate chapters in NWP 3-22.5-CH-46E Volume I.

e. Flight Training. (1 Flight, 1.5 Hours).

DM-341	1.5	C,R,O A(2 CH-46E)	C,R

Goal. Introduce multi-aircraft DM against a ground threat.

Requirement

(1) Discuss

(a) CRM/intra/interflight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) SA.

(e) Use of ALE-39, APR-39, ALQ-157, and AAR-47.

(f) Tactical formation maneuvering.

(g) Use of radar horizons, radar masking, maneuver and chaff to defeat threat radar systems.

(h) Use of terrain masking, maneuver, IR jammers, and flares to defeat threat IR missiles.

(2) Introduce

(a) Section/division DM against surface-to-air missile and radar threat systems on an EW range.

(b) Threat avoidance maneuvers and/or tactics to counter threat systems.

(c) Appropriate evasive maneuvers when engaged by a ground based threat.

Performance Standards. Demonstrate knowledge of the ASE and tactical maneuvers against ground based weapons systems.

Prerequisite. EW-331.

Ordnance. 40 chaff, 20 flares, 2 smoke grenades or pyrotechnics.

External Syllabus Support. EW range and emitter.

6. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in mountainous terrain operations.

b. General. At the completion of this stage of training aircrew will be familiar with operating procedures of MAT operations.

c. Crew Requirement. CC or CC/CCUI.

d. Academic Training. Refer to appropriate chapters in the NATOPS Manual for discussion on mountain landing zone characteristics.

e. Flight Training. (1 Flight, 1.5 Hours).

MAT-351 1.5 C,R,O 1 CH-46E A

Goal. Conduct mountainous terrain operations.

Requirement

(1) Discuss

(a) CRM.

(b) Standard terminology.

(c) Crew comfort levels.

(d) Landing site evaluation/terrain suitability.

(e) Effects of high altitude on aircraft performance.

(f) Emergency procedures.

(g) Aircraft clearances.

(h) Main mount/pinnacle landing procedures.

(2) Introduce

(a) Effects of wind in mountainous terrain.

(b) Landing on pinnacles.

(c) Landing on slopes.

(d) Landing in valleys and canyons.

(e) Crosswind, upslope, and downslope landings with respect to tail clearance.

Performance Standards. Demonstrate ability and knowledge of landing in mountainous terrain.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. Range the supports MAT.

7. Helicopter Insertion/Extraction (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, HRST Master and HRST Safety Observer shall brief together prior to commencing fastrope, rappelling, SPIE, and helocast/soft duck.

(2) The Jump Master is responsible for the safe and proper rigging of the aircraft for conduct of paraops and cargo drops. The crew chief shall preflight aircraft rigging.

(3) ICS cranials/gunner's belts required for Jump Master/Cast Master.

(4) Aircrew must be NSQ for flights conducted on NVGs.

c. Crew Requirement

(1) HIE-361 requires CC or CC/CCUI.

(2) HIE-362 requires CC/AO, ENSI/CCUI or ENSI/AOUI.

d. Ground/Academic Training

(1) Review NWP 3-22.5-CH-46E and applicable Force Orders/SOPs.

(2) Applicable courses from the MAWTS-1 course catalog.

e. Flight Training. (2 Flights, 3.0 Hours).

HIE-361 1.0 C,R,O 1 CH-46E A

Goal. Conduct airborne insertion/extraction (fastrope and rappel) procedures.

Requirement

(1) Discuss

(a) HIGE/HOGE requirements.

(b) CRM (pilots, crew chief, HRST master, and safety observer brief together).

(c) ICS procedures and standard terminology.

(d) ICS failure/hand and arm signals.

(e) Current Force Order/Wing SOP.

(f) Obstacle clearance and waveoff.

(g) Emergency procedures.

(h) Lookout doctrine.

(i) Weapons employment.

(2) Introduce

(a) Preflight of the fastrope/rappelling equipment and rigging.

(b) Assisting the pilot in maintaining an extended hover.

(c) Troop insertion via fastrope/rappelling.

(d) Hand and arm signals.

(3) Review. Fastrope and rappel procedures.

Performance Standards. Demonstrate knowledge and ability to conduct day fastrope/rappelling.

Prerequisite. CAL-211 and EXT-221.

Ordnance. None.

External Syllabus Support. Applicable HIE support equipment.

HIE-362 1.0 C,R,O 1 CH-46E A N NS C,R

Goal. Introduce NVD fastrope and rappel procedures.

Requirement

(1) Discuss

(a) CRM during NVD HIE operations.

(b) NVG considerations during NVD HIE operations.

(c) Emergency procedures during NVD HIE operations.

(2) Introduce. NVD fastrope and rappel procedures.

(3) Review

(a) Preflight of associated equipment and rigging.

(b) Skills involved for holding an extended hover.

(c) Troop insertion/extraction techniques.

Performance Standards. Demonstrate knowledge and ability to conduct NVD fastrope/rappelling.

Prerequisite. HIE-361.

Ordnance. None.

External Syllabus Support. Applicable HIE support equipment.

8. Tactics (TAC) Low and Medium Threat

a. Purpose. To introduce and develop proficiency in the execution of assault support operations in the following mission areas in a low and medium threat environment. Use MCCRES Volume III, Section A, Standards:

(1) Helicopter Assault Operation [MPS 3A.4].

(2) Noncombatant Evacuation Operation (NEO) [MPS 3A.7].

(3) Raid [MPS 3A.8].

(4) Security/Reinforcement [MPS 3A.9].

(5) Reconnaissance Patrol/Reaction Force Operation [3A.10].

(6) Medical Evacuation [MPS 3A.1].

(7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) [MPS 3A.12].

b. General

(1) CCUI shall attend the mission brief.

(2) Every attempt should be made to expend the required .50 cal rounds. However, this should not restrict the completion of the event. Squadron ordnance shall mount .50 caliber machine guns for all tactical flights.

(3) CCUI/AGOUI shall be AG qualified prior to beginning this stage.

(4) CCUI/AGOUI shall be NSQ for the light level being flown.

(5) Aircrews shall discuss CRM as applicable to each event.

c. Crew Requirement. CC/AO, CC/CCUI, or CC/AOUI.

d. Ground/Academic Training. Basic Principles of Escort Operations and Tactical Recovery of Aircraft and Personnel (TRAP) as listed in the MAWTS-1 ASP shall be taught by an EWTI prior to starting this stage.

e. Flight Training. (4 Flights, 6.0 Hours).

TAC-371	1.5	C,R,O 2 OR MORE ACFT	A	C,R

Goal. Conduct an assault support mission in a low threat scenario using MCCRES standards as a reference for mission planning.

Requirement

(1) Discuss

(a) Cabin preparations.

(b) Passenger brief and safety regulations.

(c) Ramp and hatch operation.

(d) Loading/unloading of passengers and/or internal/external cargo.

(e) Gear storage.

(f) Helicopter Emergency Egress Lighting System (HEELS).

(g) Helicopter Emergency Flotation System (HEFS), exit blocking when deployed.

(h) CRM.

(i) ICS procedures.

(j) Lookout doctrine.

(k) Penetration checklist.

(2) Introduce

(a) Aircrew responsibilities during tactical insert/extract of troops and/or cargo.

(b) Tactical formations and approaches as contained in NWP 3-22.5-CH-46E.

(3) Review. A1-H46AE-CLG-000 Cargo Loading Manual.

Performance Standards. Demonstrate the ability to perform crew responsibilities in a day low threat environment.

Prerequisite. CAL-212, TERF qualified, and AG qualified.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. Authorized TERF area, CAL site, (live fire range preferred).

TAC-372	1.5	C,R,O 2 OR MORE ACFT A N NS		C,R

Goal. Conduct an NVG assault support mission in a low threat environment using MCCRES standards as a reference for mission planning.

Requirement

(1) Discuss

(a) Use of onboard ASE during the mission.

(b) CRM during the ingress, objective area, and egress phases of the mission.

(c) Rules of engagement as applicable to the mission.

(d) Tactics used in a low threat environment.

(2) Introduce. Aircrew responsibilities during NVG tactical insert/extract of troops and/or cargo.

(3) Review. EW-331.

Performance Standards. Demonstrate ability to perform crew responsibilities during NVG operations in a low threat environment.

Prerequisite. TAC-371.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. Authorized TERF area, CAL site (live fire range preferred).

TAC-374 1.5 C,R,O 2 OR MORE ACFT A C,R

Goal. Conduct an assault support mission in a medium threat environment emphasizing MCCRES standards.

Requirement

(1) Discuss

(a) CRM during an assault support mission.

(b) Crew comfort level.

(c) Flight counter-tactics for air and ground threats.

(d) ASE utilization.

(e) Escort considerations.

(f) Control and terminology for onboard defensive weapons.

(g) NBC considerations.

(h) TERF considerations.

(i) Aerial gunnery procedures.

(j) EMCON procedures.

(2) Introduce. Multi-plane aerial gunnery in an objective area/LZ.

(3) Review. Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

Performance Standards. Demonstrate the ability to perform crew responsibilities during day operations in a medium threat environment.

Prerequisite. TAC-371.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. TERF area, CAL site, (live fire, EW range preferred).

TAC-375	1.5	C,R,O 2 OR MORE ACFT A N NS		C,R

Goal. Conduct an NVD assault support mission in a medium threat environment emphasizing MCCRES standards.

Requirement

(1) Discuss

(a) CRM during an assault support mission.

(b) Crew comfort level.

(c) Flight counter-tactics for air and ground threats.

(d) ASE utilization.

(e) Escort considerations.

(f) Control and terminology for onboard defensive weapons.

(g) NBC considerations.

(h) TERF considerations.

(i) Aerial gunnery procedures.

(2) Introduce

(a) Tactical assault support mission at night using NVDs.

(b) Escort aircraft utilization if available.

(c) Multi-aircraft NVD aerial gunnery in an objective area.

(3) Review. TAC-374. Emphasis should be on navigation, timing, formation, communication discipline, authentication procedures, escort utilization and weapons control procedures.

Performance Standards. Demonstrate the ability to perform crew responsibilities during NVD operations in a medium threat environment.

Prerequisite. TAC-372.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. TERF area, CAL site (live fire, EW range preferred).

2. External Cargo Operations (EXT)

a. Purpose. To conduct day TERF and NVD EXT.

b. General. At the completion of this stage the CCUI/AOUI will be able to conduct day or night EXT. EXT-390 requires a ETERFI for initial/refresher flight, EXT-391 requires an ENSI for initial/refresher flight.

c. Crew Requirement. EXT-390 CC/AGO, ETERFI/CCUI or ETERFI/AOUI. EXT-391 CC/AGO, ENSI/CCUI or ENSI/AGOUI.

d. Ground/Academic Training

(1) Read appropriate chapters of the NATOPS Manual.

(2) Read appropriate paragraphs of the NWP 3-22.5-CH-46E.

(3) Read appropriate paragraphs of MCRP 4-11.3E Volumes I and II, Basic Operations and Equipment and Single Point Rigging Procedures.

e. Flight Training. (2 Flights, 3.0 Hours).

EXT-391	1.0	C,R,O 1 CH-46E A		C,R

Goal. Introduce and conduct external operations in the TERF environment.

Requirement

(1) Discuss

(a) CRM.

(b) External cargo hook operations/preparation.

(c) Communication procedures.

(d) Cargo jettison procedures.

(e) Emergencies with external cargo.

(f) Waveoff procedures.

(g) ICS procedures.

(h) HST requirements.

(2) Introduce. External operations in a TERF environment.

(3) Review

(a) TERF-242.

(b) Cargo Loading Manual, A1-H46AE-CLG-000.

Performance Standards. Demonstrate the ability and knowledge to conduct external operation in a TERF environment.

Prerequisite. EXT-221 and TERF-242.

Ordnance. None.

External Syllabus Support. Single point load (1,000-4,000 pounds preferred), HST, authorized TERF route.

EXT-392 1.5 C,R,O 1 CH-46E A N NS C,R

Goal. Introduce and conduct NVD External operations.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Lost communications.

(d) Low altitude emergencies.

(e) Cargo release procedures.

(f) Cargo hook/pendant illumination.

(g) Depth perception/rate of descent.

(h) HST procedures.

(i) NVD procedures/emergencies.

(j) Waveoff.

(2) Introduce. NVD external operations.

(3) Review. Drift corrections, common terminology, ground relationship, lookout procedures during takeoffs, precision approaches, and deliveries with external cargo while wearing NVDs.

Performance Standards. Demonstrate the ability and knowledge to conduct NVD external operation.

Prerequisite

(1) EXT-221 and NVD-251.

(2) ENSI required if CCUI is not NSQ for appropriate light level.

Ordnance. None.

External Syllabus Support. Single point load (1,000-4,000 pounds preferred), HST, authorized TERF route.

234. FULL COMBAT QUALIFICATION PHASE

1. Tactics (TAC) (High Threat Environment)

a. Purpose. To develop proficiency in tactical execution of assault support operations in the following mission areas in a high threat environment. Use MCCRES Volume III, Section A, Standards:

(1) Helicopter Assault Operation [MPS 3A.4].

(2) Noncombatant Evacuation Operation (NEO) [MPS 3A.7].

(3) Raid [MPS 3A.8].

(4) Security/Reinforcement [MPS 3A.9].

(5) Reconnaissance Patrol/Reaction Force Operation [3A.10].

(6) Medical Evacuation {MPS 3A.1].

(7) Tactical Recovery of Aircraft, Equipment, and Personnel (TRAP) [MPS 3A.12].

b. General

(1) CCUI shall attend the mission brief.

(2) Every attempt should be made to expend the required .50 cal rounds. However, this should not restrict the completion of the event. Squadron ordnance shall mount .50 caliber machine guns for all tactical flights.

(3) CCUI/AGOUI shall be AG qualified prior to beginning this stage.

(4) CCUI/AGOUI shall be NSQ for the light level being flown.

(5) Aircrews shall discuss CRM as applicable to each event.

c. Crew Requirement. CC/AG, CC/CCUI or CC/AOUI.

d. Ground/Academic Training. Appropriate lectures in the MAWTS-1 Crew Chief ASP.

e. Flight Training. (2 Flights, 3.0 Hours).

TAC-401	1.5	C,R,O 2 OR MORE ACFT A		C,R

Goal. Conduct an assault support mission in a high threat environment using MCCRES standards. Incorporate AG and EW concepts and skills.

Requirement

(1) Discuss

(a) CRM/crew comfort level.

(b) ASE operations and secure voice capability.

(c) NBC considerations.

(d) Aerial gunnery procedures.

(2) Introduce

(a) Secure voice and ASE equipment.

(b) Navigation, timing, formation, defensive weaponry, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

(3) Review. TAC-374.

Performance Standards. Demonstrate knowledge and ability to perform crew responsibilities in a high threat environment.

Prerequisite. TAC-374 and DM-341.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. As available: live fire (HE preferred), Laser capable, FW/RW Escort/CAS assets, EW Emitter, FW/RW Adversaries, Smokey SAMs.

TAC-402 1.5 C,R,O 2 OR MORE ACFT A N NS C

Goal. Conduct an NVD assault support mission in a high threat environment using MCCRES standards.

(1) Discuss

(a) In addition to the TAC-401 discussion items, discuss NVD (LLL) operational considerations.

(b) Execute a NVD (LLL) mission similar to TAC-401. Mission will be flown at TERF altitudes.

(c) Emphasis on lookout doctrine, navigation, timing, formation, communication discipline, authentication procedures, escort utilization, and weapons control procedures.

(2) Introduce. NVD high threat tactics.

(3) Review. TAC-401.

Performance Standards. Demonstrate knowledge and ability to perform crew responsibilities during NVD operations in a high threat environment.

Prerequisite. TAC-401 and TAC-375.

Ordnance. 500 rounds .50 cal.

External Syllabus Support. As available: live fire (HE preferred), Laser capable, FW/RW Escort/CAS assets, EW Emitter, FW/RW Adversaries and Smokey SAMs.

2. Nuclear, Biological, and Chemical (NBC)

a. Purpose. To develop proficiency with the AR-5 protective assembly during normal and tactical flight operations.

b. General

(1) For the safe execution of initial NBC flights, one pilot and one aircrewman shall remain unmasked. On subsequent flights, all aircrew may remain masked.

(2) Initial NBC-431 training flight will be flown in HLL conditions. Proficiency flights may be flown in LLL.

(3) Aircrew shall be NSQ (HLL).

(4) ENSI required for all initial NVD instructional flights.

(5) If flown during LLL conditions, aircrew shall be NSQ.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Ground/Academic Training

(1) Discuss and review NBC information contained in NWP 3-22.5-CH-46E.

(2) Discuss AR-5 hookup and operating procedures in the aircraft.

(3) Egress drills with full NBC protective equipment simulating both overland and overwater emergencies shall be completed prior to NBC instructional flights.

e. Flight Training. (2 Flights, 2.0 Hours).

NBC-430	1.0	C,R 1 CH-46E A		C,R

Goal. Conduct normal flight operations in a simulated NBC environment.

Requirement

(1) Discuss

(a) Aircrew protective ensemble.

(b) Nuclear effects to aircraft and aircrew.

(c) Chemical and Biological agents, their effects and aircrew protective measures.

(d) Decontamination considerations.

(e) CRM in a NBC environment, to include emergency procedures.

(f) Operation, capabilities and limitations of protective masks.

(g) Physiological limitations and fatigue factors imposed by NBC protective equipment.

(h) Heliborne operations in a NBC environment.

(2) Introduce. (With AR-5 donned).

(a) Start/taxi while masked.

(b) Takeoff/landing while masked.

(c) Straight & level flight while masked.

(d) Hovering while masked.

(e) CALs while masked.

(3) Review. Donning, adjustments, and doffing of the AR-5.

Performance Standards. Demonstrate the ability to perform crew responsibilities in a NBC environment.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. CAL site.

NBC-431 1.0 C,R 1 CH-46E A N NS C,R

Goal. Conduct NVD flight operations in a simulated NBC environment.

Requirement

(1) Discuss

(a) CRM.

(b) Limitations of mask pertaining to flight scan and visual acuity.

(c) Limitations and fatigue factors imposed by NBC protective equipment.

(d) Proper mask maintenance and factors which render the mask unserviceable.

(e) Limitations of NVDs caused by mask affecting scan and visual acuity.

(f) Limitations and fatigue factors imposed by NBC protective equipment and NVDs.

(2) Introduce. (with AR-5 and NVDs donned).

(a) Start/taxi while masked and wearing NVDs.

(b) Takeoff/landings while masked and wearing NVDs.

(c) Straight & level flight while masked and wearing NVDs.

(d) Hovering while masked and wearing NVDs.

(e) CALs while masked and wearing NVDs.

(3) Review. Proper use of the AR-5 protective mask (donning and removing on the ground and in the air).

Performance Standards. Demonstrate knowledge and ability to perform NVD NBC operations.

Prerequisite. NVD-257 and NBC-430.

Ordnance. None.

External Syllabus Support. CAL site.

3. Defensive Measures (DM)

a. Purpose. To develop proficiency in tactics and aerial DM used to evade enemy air threats.

b. General

(1) After completion of DM-341, DM-441 and DM-442, the CCUI/AGOUI is DMQ. A qualification letter signed by the commanding officer stating the CCUI/AGOUI is DMQ is required to be placed in the aircrew's APR and NATOPS jacket with appropriate logbook entry.

(2) Aircrews shall not conduct DM training unless the following requirements are met:

(a) A EDMI is required for all initial/refresher flights.

(b) The EDMI shall not have lookout responsibilities during DM training.

(c) The flight lead briefs any aggressor aircrew per T&R Manual, Administrative and covers training rules prior to each flight.

(3) For helicopter versus helicopter DM, the aggressor aircraft shall be a non-assault helicopter.

(4) .50 caliber machine guns shall be mounted for all DM flights.

c. Crew Requirement. CC/AO, EDMI/CCUI/AO, EDMI/CC/AOUI, EDMI/CCUI/CCUI or EDMI/AOUI/AOUI.

d. Ground/Academic Training

(1) Review applicable chapters of the NWP 3-22.5-CH-46E for EW, ASE, and formation maneuvering.

(2) Review appropriate chapters in the CH-46E NATOPS.

(3) Complete the DM academic classes listed in the MAWTS-1 Crew Member ASP prior to DM-341.

(4) Discuss information in NWP 3-22.5-CH-46E, Vol. II pertaining to CH-46 energy and maneuverability versus a specific aircraft.

e. Flight Training. (2 Flights, 3.0 Hours).

DM-441 1.5 C,R,O 2 CH-46E VS 1 RW AGGRESSOR A C,R

Goal. Introduce DM against a RW aggressor.

Requirement

(1) Discuss

(a) CRM/Inter-flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Common terminology.

(e) SA.

(f) DM training rules.

(g) Closure rate, radius of turn, and energy state.

(h) Use and operation of ALE-39, APR-39, ALQ-157, and AAR-47.

(i) Use of .50 cal machine gun.

(j) DM against RW aggressor.

(k) Mil sight values.

(l) Wingman position SA.

(m) Terrain avoidance.

(2) Introduce. Helicopter versus helicopter DM with an aggressor helicopter per the MAWTS-1 CH-46 DM Guide.

(3) Review. Helicopter performance characteristics and NATOPS limitations.

Performance Standards. Demonstrate knowledge and ability to conduct helicopter versus helicopter defensive measures.

Prerequisite. FORM-231 and DM-341.

Ordnance. None.

External Syllabus Support. Range (TACTS optional), RW adversary (RW platform capable of forward firing ordnance).

DM-442 1.5 C,R,O 2 CH-46E VS 1 F/W AGGRESSOR A C,R

Goal. Introduce DM against a FW aggressor.

Requirement

(1) Discuss

(a) CRM/Intra-flight coordination.

(b) Crew comfort level.

(c) Lookout doctrine.

(d) Common terminology.

(e) SA.

(f) Closure rate, radius of turn, and energy state.

(g) FW weapons parameters and considerations.

(h) DM training rules.

(i) Use of .50 cal machine gun.

(j) DM against FW aggressor.

(k) Wingman position SA.

(l) Terrain avoidance.

(2) Introduce. Helicopter versus FW DM per the MAWTS-1 CH-46 DM Guide.

(3) Review. DM-341.

Performance Standards. Demonstrate knowledge of ASE, DM, and use of the .50 cal against threat systems. Aircrew shall also demonstrate the ability to conduct DM utilizing the timely attack warning.

Prerequisite. FORM-231 and DM-341.

Ordnance. None.

External Syllabus Support. Range (TACTS optional), FW adversary.

4. Mountain Area Training (MAT)

a. Purpose. To develop proficiency in mountainous terrain operations.

b. General. Initial MAT-451 will be conducted in HLL conditions. Proficiency flights may be conducted under LLL.

c. Crew Requirement

(1) MAT-450 requires CC or CC/CCUI.

(2) MAT-451 requires CC/AO, CC/CCUI or CCAOUI.

d. Academic Training. Refer to appropriate chapters in the NATOPS Manual for discussion of mountain landing zone characteristics.

e. Flight Training. (2 Flights, 3.0 Hours).

MAT-450 1.5 C,R,O 2 CH-46E A

Goal. Introduce section aircraft operations in mountainous terrain.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Communication/standard terminology.

(d) Multi-aircraft operations.

(e) Lookout doctrine.

(f) Landing site evaluation/terrain suitability.

(g) Effects of high altitude on aircraft performance.

(h) Emergency procedures.

(2) Introduce

(a) Section operations in mountainous terrain.

(b) Section CALs in mountainous terrain.

(3) Review. CAL-212 and MAT-351.

Performance Standards. Demonstrate the ability to conduct section landings in mountainous terrain.

Prerequisite. CAL-212 and MAT-351.

Ordnance. None.

External Syllabus Support. Range that supports MAT.

MAT-451 1.5 C,R,O 1 CH-46E A N NS C,R

Goal. Introduce NVD mountainous area operations.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Communication/common terminology.

(d) Landing site evaluation/terrain suitability.

(e) Emergencies (aircraft and NVDs).

(f) NVD failures.

(g) NVD navigation techniques.

(2) Introduce

(a) NVD mountainous terrain operations.

(b) NVD CALs in mountainous areas.

(3) Review. NVD-251.

Performance Standards. Demonstrate ability to conduct NVD MAT.

Prerequisite. NVD-251 and MAT-351.

Ordnance. None.

External Syllabus Support. Range that supports MAT.

5. Helicopter Insertion/Extraction (HIE)

a. Purpose. To develop proficiency in HIE procedures.

b. General

(1) Pilot, copilot, crew chief, HRST Master, and HRST Safety Observer shall brief together prior to commencing fastrope, rappelling, and SPIE.

(2) The Jump Master is responsible for the safe and proper rigging of the aircraft for conduct of paraops and cargo drops. The crew chief shall preflight aircraft rigging.

(3) ICS cranials and gunner's belts are required for all HIE events.

(4) CCUI/AGOUI shall be NSQ for the light level being flown.

(5) An ENSI is required for initial/refresher NVD flights.

c. Crew Requirement

(1) HIE-460, 462, and 463 require CC or CC/CCUI.

(2) HIE-461 requires CC/AO, ENSI/CCUI or ENSI/AOUI if flown on NVDs.

d. Ground/Academic Training

(1) Review NWP 3-22.5-CH-46E and applicable Force Orders/SOPs.

(2) Review NWP 19-1 series for rescue procedures and MCO 3130 series for Category B SAR Unit procedures.

(3) Applicable courses from the MAWTS-1 Course Catalog.

e. Flight Training. (4 Flights, 4.0 Hours).

HIE-460 1.0 C,R,O 1 CH-46E A

Goal. Introduce SPIE rig operations.

Requirement

(1) Discuss

(a) HIGE/HOGE requirements.

(b) CRM (pilots, crew chief, HRST Master, and HRST Safety Observer brief together).

(c) ICS procedures and standard terminology.

(d) ICS failure/hand and arm signals.

(e) Current Force Order/Wing SOP.

(f) Emergency procedures.

(g) Obstacle clearance/waveoff.

(h) Lookout doctrine.

(i) SPIE from water.

(2) Introduce

(a) Inspection of the SPIE rig.

(b) Tactical troop insert/extract via SPIE.

(3) Review. SPIE rig procedures.

Performance Standards. Demonstrate ability and knowledge to conduct day SPIE operations.

Prerequisite. EXT-221.

Ordnance. None.

External Syllabus Support. Applicable HIE support equipment, HRST and Safety Observers.

HIE-461 1.0 C,R,O 1 CH-46E A (N)(NS) C,R

Goal. Introduce day or NVD aerial delivery procedures.

Requirement

(1) Discuss

(a) CRM (pilot, copilot, crew chief, and Jump Master/Cast Master brief together).

(b) Voice communication/standard terminology during aerial deliveries.

(c) Tactical considerations for aerial delivery of troops/cargo.

(d) Proper rigging and preflight of equipment to be inserted by aerial delivery.

1 Paraop procedures.

2 Sensor drop procedures.

3 ICS procedures.

(e) Emergency procedures.

(f) Movement within aircraft cabin.

(2) Introduce. Paraop or sensor drop operations.

(3) Review. Paraop or sensor drop procedures.

Performance Standards. Demonstrate the ability to conduct aerial delivery.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. Certified DZ, Jumpmaster and Safety Observers.

HIE-462 1.0 C,R,O 1 CH-46E A

Goal. Introduce helocast/soft duck procedures.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Waterfall effect.

(d) Salt encrustation.

(e) Ditching procedures.

(f) Helicopter Emergency Flotation System (HEFS).

(g) Ditching/water landing.

(2) Introduce

(a) Helocasting/soft duck procedures.

(b) Preflight of aircraft, troops and equipment for helo cast or soft duck.

(3) Review

(a) Overwater emergency procedures.

(b) Helocasting/soft duck progress.

Performance Standards. Demonstrate ability to conduct helocast/soft duck operations.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. Castmaster and Safety Observers.

HIE-463 1.0 C,R,O 1 CH-46E A (N)(NS)

Goal. Introduce hoist and rescue procedures.

Requirement

(1) Discuss

(a) CRM.

(b) Crew comfort levels.

(c) Waterfall effect.

(d) Salt encrustation.

(e) Ditching procedures.

(f) HEFS.

(g) SAR equipment.

(h) Emergency procedures.

(i) Cable entanglements.

(2) Introduce

(a) Rescue procedures.

(b) Internal winch/external hoist rigging.

(c) Hoist procedures for hatch and "hell hole."

(d) Use of rescue strop, jungle penetrator, and stokes litter.

(e) Emergency procedures including use of Chicago grip, quick splice, and cable cutters.

(3) Review

(a) Overwater emergency procedures.

(b) SAR procedures and facilities.

Performance Standards. Demonstrate knowledge and ability to conduct hoisting operations.

Prerequisite. EXT-221.

Ordnance. None.

External Syllabus Support. Operational jungle penetrator or SAR basket (as available).

6. Aircraft Procedures Familiarization

a. Purpose. To familiarize the crew chief with cockpit emergency procedures, switches and CNCS.

b. General

(1) Refer to NATOPS for emergency procedures and CNCS operation.

(2) Pilots may sign off the initial crew chief ATF on this code only.

c. Crew Requirement. HAC/crew chief.

d. Ground/Academic Training. Review appropriate chapters of the NATOPS.

e. Simulator training. (1 event, 1.5 Hours).

SFAM-470 1.5 C,R,O S

Goal. To better assist the pilots during aircraft emergency and multi-task situations.

Requirement

(1) Discuss

(a) CNCS operation and programming procedures.

(b) Pilot emergency procedures.

(c) Cockpit procedures.

(d) Aircraft systems procedures.

(e) Aircraft flight characteristics.

(2) Introduce

(a) Pilot emergency procedures.

(b) CNCS operation and procedures.

(3) Review. Pilot emergency procedures and ASE.

Performance Standards. The crew chief shall demonstrate the ability to assist pilots during emergency procedures, CNCS operation and ASE operation.

Prerequisite. None.

Ordnance. None.

External Syllabus Support. WST/AST.

7. Carrier Qualification (CQ)

a. Purpose. To introduce/refresh the CC/AGO in unaided shipboard landings.

b. General

(1) Refer to LHA/LPH/LHD NATOPS Manuals and NWP-42 for air capable ship operations.

(2) Night CQ Requirements

(a) Requirements for initial/Refresher/delinquent qualification are:

- five day CQs.
- five NVD CQs.
- five night unaided CQs.

(b) CC/AGOs previously night CQ and proficient per paragraph (2)a above shall complete the following to maintain proficiency:

- two day CQs.
- two NVD CQs. (Note: CQ-301 chains CQ-300 and CQ-491).
- two night unaided CQs. (Note: CQ-491 chains CQ-300).

(3) CQ-301 shall be flown under HLL conditions for initial qualification. ENSI required for initial NVD flights. Currency and re-qualification flights may be flown under any light level condition.

(4) CC/AGO is CQ on completion of CQ-300, CQ-301 and CQ-491.

(5) CC/AGO is authorized to carry passengers during daylight hours when proficient in CQ-300.

(6) CC/AGO is authorized to carry passengers under all conditions when proficient in CQ-301 and CQ-491.

(7) CC/AGO shall discuss CRM as applicable to each event.

c. Crew requirements. CC, CC/CCUI.

d. Ground/Academic Training. Review appropriate chapters of NWP-42 and the LPH/LHA/LHD NATOPS Manual.

e. Flight Training. (1 Flight, 1.0 Hour).

CQ-491 1.0 C,R,O 1 CH-46E A N

Goal. Conduct night unaided CQs.

Requirement

(1) Discuss

(a) CRM during shipboard landings.

(b) Communications used during shipboard landings.

(c) LSE signals.

(d) Water landings/ditching.

(e) Aircraft lighting used during shipboard landings.

(f) Rotor engagement/disengagement.

(g) Launch/recovery wind envelopes.

(h) LSE signals.

(2) Introduce. Unaided CQ operations.

(3) Review. CQ-292 and CQ-300.

Performance Standards. Demonstrate ability to conduct unaided carrier landings.

Prerequisite. CQ-292 and CQ-300.

Ordnance. None.

External Syllabus Support. CQ capable ship.

240. INSTRUCTOR TRAINING

1. Instructor Under Training (IUT)

a. Purpose. To standardize procedures for qualifying syllabus instructors within the FRS (this event applies only to FREST instructor evaluations).

b. General

(1) The CC IUT must demonstrate proficiency in instructing all evolutions in this stage.

(2) Upon completion of this stage the CC IUT shall be designated a Crew Chief Instructor (CCI).

(3) The CC IUT shall have completed the requirements for designation as Night Systems FAM Instructor (NSFI) and TERFI per MAWTS-1 Course Catalog.

(4) Prerequisite. TERF/NSQ.

c. Crew Requirements. CCI/CCIUT.

d. Ground/Academic Training. None.

e. Flight Training. (1 Flight, 2.0 hours).

STAN-500 2.0 E 1 CH-46E A

Goal. Standardize instructional techniques during FAM/FORM/CAL/EXT sorties.

Requirement

(1) Demonstrate instructional techniques of crew chief responsibilities during FAM/FORM/EXT/CAL emphasizing lookout doctrine, crew coordination, ICS procedures, and obstacle clearance.

(2) Demonstrate ability to instruct in the use of checkpoints, barrier features, prominent terrain features, map interpretation, and crew coordination.

Performance Standards. The crew chief will conform to instructional techniques set forth by the FRS for all FAM maneuvers IAW the FRS Standardization Manual and NATOPS Manual.

Prerequisite. Appropriate FRS lessons.

Ordnance. None.

External Syllabus Support. None.

250. REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS

1. NATOPS Training/Evaluation.

a. Purpose. To complete the annual NATOPS requirement.

b. General

(1) This is an annual flight requirement as listed in OPNAVINST 3710.7 and A1-H46AE-NFM-000 (CH-46 NATOPS Manual).

(2) This flight code will not provide a combat readiness percentage value and will be used primarily to assist in management and tracking annual NATOPS evaluations.

(3) The evaluating crew chief shall be a designated NATOPS Evaluator/Assistant NATOPS instructor.

c. Crew Requirements. CC/CC or CC/AGO.

d. Ground/Academic Training. None.

e. Flight Training. (1 Flight, 1.5 Hours).

RQD-600 1.5 C,R,O E 1 CH-46E A (N)(NS) C,R,E

Goal. CC/AGO annual NATOPS evaluation.

Requirement. Evaluate proficiency using all aspects of the CH-46E as a weapons system. The proficiency expected by the evaluator in this flight shall be commensurate with the experience of the CC or AGO being evaluated.

Discuss. All emergency procedures and Standardization Manual maneuvers.

Introduce. None.

Review. None.

Performance Standards. The performance expected by the evaluator in this flight shall be commensurate with the experience of the aircrew under evaluation.

Prerequisite. Completion of the open and closed book NATOPS examinations.

Ordnance. None.

External Syllabus Support. None.

251. GRADUATE LEVEL COURSES

1. There are seven graduate level courses that qualify crew chief instructors for specific portions of the T&R syllabus. These courses are as follows:

a. Enlisted Weapons and Tactics Instructor (EWTI Sec MOS 6177).

b. Enlisted Terrain Flight Instructor (ETERFI).

c. Enlisted Night Systems FAM Instructor (ENSFI).

d. Enlisted Night Systems Instructor (ENSI).

e. Enlisted Defensive Measures Instructor (EDMI).

f. Aerial Gunner Instructor (AGI).

g. Enlisted Night Systems SAR Instructor (ENSSI).

2. The above courses and applicable training codes are listed in the current MAWTS-1 Course Catalog. There will be no refly factors for these instructor flights. T&R syllabus currency in stages is considered sufficient to maintain currency as an instructor. EWTIs are only qualified at the Weapons and Tactics Instructor course conducted at MAWTS-1 during WTI.

252. SPECIAL TRAINING. This category is designed for aircrew to develop proficiency in flight procedures and techniques involving special training requirements. Due to the special equipment and logistical support, facilities or supporting units required to conduct special training flights, squadrons may complete these flights as appropriate support becomes available and mission requirements dictate.

1. Arctic Weather Training (AWT)

a. Purpose. To teach the fundamentals of and/or develop proficiency in any aspect of flying in cold weather with snow on the ground.

b. General

(1) Ambient air temperatures will normally be 10 degrees or below Fahrenheit with snow on the ground. Aircrew must note that cold dry

conditions with blowing snow will significantly increase the difficulty of arctic weather flight.

(2) Aircrew shall be NSQ for all NVG flights.

c. Crew Requirement. CC (AO if NVDs are used).

d. Ground/Academic Training

(1) Environmental factors.

(2) Arctic weather survival.

(3) Arctic weather physiology/psychology.

e. Flight Training. (1 Flight, 2.0 Hours).

AWT-620 2.0 1 CH-46E A (N)(NS)

Goal. Introduce helicopter operations in a cold weather environment.

Requirement.

(1) Discuss

(a) Cold dry conditions.

(b) Blowing snow.

(c) White-out conditions.

(d) Aircraft cold weather limitations.

(e) Aircraft anti-ice.

(f) Icing.

(2) Introduce. Snow landing techniques.

(3) Review. NATOPS.

Performance Standards. Demonstrate ability to conduct aircraft operations in a cold weather environment.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. Snow on the ground.

2. Desert Operations (DES)

a. Purpose. To develop proficiency in aspects of flying in a dusty, high temperature, high density altitude, desert environment.

b. Crew Requirement. CC (AO if NVDs are used).

c. Ground/Academic Training

(1) Environmental factors (weather, desert conditions).

(2) Desert weather survival.

(3) Desert weather physiology/psychology.

(4) Desert weather clothing and equipment.

d. Flight Training. (1 Flight, 2.0 Hours).

DES-630 2.0 1 CH-46E A (N)(NS)

Goal. Introduce helicopter operations in a desert environment.

Requirement.

(1) Discuss

(a) Blowing sand.

(b) Brownout conditions.

(c) Aircraft hot weather performance limitations.

(2) Introduce. Desert landing techniques.

(3) Review. NATOPS.

Performance Standards. Demonstrate ability to conduct aircraft operations in a desert environment.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. Desert environment.

3. CRM Training

a. Purpose. To conduct annual CRM Training.

b. Crew Requirement. CC/(AO if NVDs are used).

c. Flight Training. (1 Flight, 2.0 Hours).

CRM-640 2.0 C,R 1 CH-46E A

Goal. Practice/review CRM principles presented in the CH-46E CRM Training Course while executing a simulated mission scenario.

Requirement

(1) Discuss

(a) Decision making.

(b) Assertiveness.

(c) Mission analysis.

(d) Communication.

(e) Leadership.

(f) Adaptability/flexibility.

(g) SA.

(2) Evaluate

(a) Decision making.

(b) Assertiveness.

(c) Mission analysis.

(d) Communication.

(e) Leadership.

(f) Adaptability/flexibility.

(g) SA.

(3) Emergencies. Perform as required to evaluate the above skills.

Prerequisite. Completion of the CH-46E CRM course.

Ordnance. None.

External Syllabus Support. None.

4. Water Landings (WTR)

a. Purpose. To develop the skills necessary to perform water landings.

b. General. Practice water landings shall be made in a fresh water environment.

c. Crew Requirement. CC.

d. Flight Training. (1 Flight, 1.0 Hour).

WTR-650 1.0 C,R 1 CH-46E A

Goal. Assist the pilot with executing a water landing.

Requirement

(1) Discuss

(a) CRM requirements for water landings.

(b) Water landing checklist.

(c) Waterfall effect and salt encrustation.

(d) Rescue with the side door down procedures and limitations.

(e) Inadvertent HEFS deployment.

(f) Ditching.

(2) Introduce

(a) Water taxi.

(b) Vertical water takeoff.

(c) Vertical water landing.

(d) Running water takeoff.

(e) Running water landing.

(3) Review. Overwater rescue hoist operations.

Performance Standards. Demonstrate the ability to conduct water landings.

Prerequisite. CAL-211.

Ordnance. None.

External Syllabus Support. Authorized fresh water landing area.

260. ORDNANCE REQUIREMENTS. Requirements are based on a single aircrew basis per OPNAVNOTE 8010.

ORDNANCE	100 SERIES	200 SERIES	300 SERIES	400 SERIES	REFRESHER	IUT	*ANNUAL
.50 cal	0	1,500	3,000	1,000	3,500	2,000	3,500

* Annual Ordnance requirements maintain aircrew member proficiency.

AIRCRAFT: CH-46E MOS: 6172 CREW POSITION: CREW CHIEF

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	O	E	REMARKS
COMBAT CAPABLE PHASE									
FAM	109	1.5	*	3.5	X			X	A
	110	1.5	*	3.5	X		X	X	A
	117	1.5	*	3.5	X			X	A N
	119	2.0	*	3.5	X			X	A N NS
NAV	130	1.5	*	4.5	X			X	A (N)
	133	1.5	*	5.0	X			X	A N NS
CAL	141	1.5	*	4.5	X			X	A
	142	1.5	*	5.0	X		X	X	A N NS
FORM	151	1.5	*	4.5	X			X	2 A
	152	1.5	*	4.5	X		X	X	2 A
EXT	161	1.5	*	4.5	X		X	X	A
TERF	171	1.5	*	4.0	X		X	X	A
RVW	181	1.5	*	4.5	X		X		A
CCX	182	2.0	*	5.0	X		X	X	A
COMBAT READY PHASE									
FAM	201	1.5	6	0.5	X	X			A (N)
CAL	211	1.5	6	1.0	X				A
	212	1.5	6	0.5	X	X	X		2 A (N)
	213	1.5	12	0.5	X	X	X		A N
EXT	221	1.5	12	1.0	X	X	X		A
FORM	231	1.5	6	0.5	X	X			2 A
TERF	241	1.5	6	0.5					A
	242	1.5	6	0.5					A
	243	1.5	6	1.0	X	X	X		2 A
NVD	251	1.5	6	0.5	X	X	X		A N NS
	252	1.5	6	0.5	X				2 A N NS
	253	1.5	6	1.0	X	X	X		2 A N NS
	254	1.5	6	1.0	X	X			3 A N NS
	255	1.5	6	0.5					A N NS
	256	1.5	6	0.5	X	X	X		2 A N NS
	257	1.5	6	1.0	X	X	X		2 A N NS
AG	280	1.5	*	0.0	X				S
	281	1.5	12	0.5	X				A
	282	1.5	12	1.0	X	X	X		2 A
	283	1.5	12	1.0	X	X	X		A
CQ	291	1.0	12	0.5	X	X	X		A
	292	1.0	12	0.5	X	X	X		A N NS
	293	1.0	12	0.5	X	X			A N

Figure 2-1.--MOS 6172 Refly Interval, CRP.

AIRCRAFT: CH-46E MOS: 6172 CREW POSITION: CREW CHIEF

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	O	E	REMARKS
COMBAT QUALIFICATION PHASE									
CQ	300	1.5	12	1.0	X	X	X		A
	301	1.0	12	1.0	X	X	X		A N NS
NVD	311	1.5	6	1.0	X	X	X		A N NS
	312	1.5	6	1.0	X	X			2 A N NS
	313	1.5	6	1.0	X	X	X		3+ A N NS
	314	1.5	6	1.0	X	X	X		2+ A N NS
AG	320	1.5	*	0.0	X				S
	321	1.5	12	1.0	X				A N NS
	322	1.5	12	1.5	X	X	X		2 A N NS
EW	331	1.5	12	0.5	X	X			A
DM	341	1.5	12	1.0	X	X	X		2 A
MAT	351	1.5	12	0.5	X	X	X		A
HIE	361	1.0	12	1.0	X	X	X		A
	362	1.0	12	1.0	X	X	X		A N NS
TAC	371	1.5	6	1.0	X	X	X		2+ A
	372	1.5	6	1.0	X	X	X		2+ A N NS
	374	1.5	6	1.5	X	X	X		2+ A
	375	1.5	6	1.5	X	X	X		2+ A N NS
EXT	391	1.0	12	1.0	X	X	X		A
	392	1.5	12	1.5	X	X	X		A N NS
FULL COMBAT QUALIFICATION PHASE									
TAC	401	1.5	12	0.5	X	X	X		2+ A
	402	1.5	12	0.5	X	X	X		2+ A N NS
NBC	430	1.0	12	0.2	X	X			A
	431	1.0	12	0.3	X	X			A N NS
DM	441	1.5	12	0.5	X	X	X		A 2V1 R/W
	442	1.5	12	0.5	X	X	X		A 2V1 F/W
MAT	450	1.5	12	0.3	X	X	X		2 A
	451	1.5	12	0.3	X	X	X		A N NS
HIE	460	1.0	12	0.5	X	X	X		A
	461	1.0	12	0.5	X	X	X		A (N)(NS)
	462	1.0	12	0.3	X	X	X		A
	463	1.0	12	0.3	X	X	X		A (N)(NS)
SFAM	470	1.5	*	0.0	X	X	X		S
CQ	491	1.0	12	0.3	X	X	X		A N

Figure 2-1.--MOS 6172 Refly Interval, CRP--Continued.

AIRCRAFT: CH-46E MOS: 6172 CREW POSITION: CREW CHIEF

STAGE	FLT TRNG	CODE	HRS	REFLY INTERVAL	CRP	C	R	O	E	REMARKS
INSTRUCTOR TRAINING										
STAN		500	2.0	*	0.0				X	A
REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS										
RQD		600	1.5	12	0.0	X	X	X	X	A (N) (NS)
SPECIAL TRAINING										
AWT		620	2.0	*	0.0					A (N) (NS)
DES		630	2.0	*	0.0					A (N) (NS)
CRM		640	2.0	12	0.0	X	X			A
WTR		650	1.0	*	0.0	X	X			

Figure 2-1.--MOS 6172 Refly Interval, CRP--Continued.

AIRCRAFT: CH-46E CREW POSITION: AERIAL GUNNER/OBSERVER

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	E	REMARKS
COMBAT READY PHASE								
FAM	201	1.5	6	0.5	X	X		A (N)
CAL	211	1.5	6	0.5	X			A
	212	1.5	6	0.5	X	X		2 A (N)
FORM	231	1.5	6	0.5	X	X		2 A
TERF	241	1.5	6	0.5				A
	242	1.5	6	0.5				A
	243	1.5	6	1.0	X	X		2 A
NVD	251	1.5	6	0.5	X	X		A N NS
	252	1.5	6	0.5	X			2 A N NS
	253	1.5	6	1.0	X	X		2 A N NS
	254	1.5	6	1.0	X	X		3 A N NS
	255	1.5	6	1.0				A N NS
	256	1.5	6	1.0	X	X		2 A N NS
	257	1.5	6	1.0	X	X		2 A N NS
AG	280	1.5	*	0.0	X			S
	281	1.5	12	1.0	X			A
	282	1.5	12	1.5	X	X		2 A
	283	1.5	12	1.5	X	X		A
CQ	292	1.0	12	0.5	X	X		A N NS
	293	1.0	12	0.5	X	X		A N
COMBAT QUALIFICATION PHASE								
CQ	300	1.0	12	1.0	X	X		A
	301	1.0	12	1.0	X	X		A N NS
NVD	311	1.5	6	1.0	X	X		A N NS
	312	1.5	6	1.0	X	X		2 A N NS
	313	1.5	6	1.5	X	X		3+ A N NS
	314	1.5	6	1.5	X	X		2+ A N NS
AG	320	1.5	*	0.0	X			S
	321	1.5	12	1.0	X			A N NS
	322	1.5	12	1.0	X	X		2 A N NS
EW	331	1.5	12	1.0	X	X		A
DM	341	1.5	12	1.0	X	X		2 A
HIE	362	1.0	12	1.0	X	X		A N NS
TAC	371	1.5	6	1.5	X	X		2+ A
	372	1.5	6	1.5	X	X		2+ A N NS
	374	1.5	6	1.5	X	X		2+ A
	375	1.5	6	1.5	X	X		2+ A N NS
EXT	391	1.0	12	1.0	X	X		A
	392	1.5	12	1.0	X	X		A N NS

Figure 2-2.--Aerial Gunner and Observer Refly Interval, CRP.

AIRCRAFT: CH-46E CREW POSITION: AERIAL GUNNER/OBSERVER

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	E	REMARKS
FULL COMBAT QUALIFICATION PHASE								
TAC	401	1.5	12	0.7	X	X		2+ A
	402	1.5	12	0.7	X			2+ A N NS
NBC	430	1.0	12	0.5	X	X		A
	431	1.0	12	0.5	X	X		A N NS
DM	441	1.5	12	0.8	X	X		A 2V1 R/W
	442	1.5	12	0.8	X	X		A 2V1 F/W
MAT	451	1.5	12	0.5	X	X		A N NS
HIE	461	1.0	12	0.5	X	X		A (N)(NS)
REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS								
RQD	600	1.5	12	0.0	X	X	X	A (N) (NS)
SPECIAL TRAINING								
AWT	620	2.0	*	0.0				A (N) (NS)
DES	630	2.0	*	0.0				A (N) (NS)
CRM	640	2.0	12	0.0	X	X		S

Figure 2-2.--Aerial Gunner and Observer Refly Interval, CRP--Continued.

CREW CHIEF FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
FAM	201	
CAL	211	201
	212	201,211
	213	201,211
EXT	221	211
FORM	231	
TERF	241	
	242	241
	243	231,241,242
NVG	251	211
	252	231
	253	211,212,231,251,252
	254	211,212,231,251,252,253
	255	241,242
	256	231,241,242,243,252,253,255
	257	231,241,242,243,252,253,255,256
AG	280	
	281	201,280
	282	201,280,281
	283	201,280,281
CQ	291	
	292	291,293
	293	291
CQ	300	291
	301	292,300,302
NVG	311	211,251
	312	211,212,251,252,253,311
	313	211,212,251,252,253,254,311,312
	314	254,255,256,257,311,312,313
AG	320	280
	321	281,320
	322	281,282,321
EW	331	
DM	341	241,242,243,331
MAT	351	211

Figure 2-3.--Crew Chief Flight Update Chaining.

CREW CHIEF FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
HIE	361	
	362	
TAC	371	211,212,231,241,242,243
	372	211,212,231,241,242,243,251,252,253,255,256,257,371
	374	211,212,231,241,242,243,371,
	375	211,212,231,241,242,243,251,252,253,255,256, 257,311,312,314,371,372,374
EXT	391	221,241,242
	392	211,221
TAC	401	211,212,231,241,242,243,371,374
	402	211,212,231,241,242,243,251,252,253,255,256, 257,311,312,314,371,372,374,375,401
NBC	430	211
	431	213,251
DM	441	231
	442	231
MAT	450	211,212,351
	451	211,213,251,311
HIE	460	
	461	
	462	
	463	
SFAM	470	
CQ	491	293,300

Figure 2-3.--Crew Chief Flight Update Chaining--Continued.

AERIAL GUNNER/OBSERVER FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
FAM	201	
CAL	211	201
	212	201,211
FORM	231	
TERF	241	
	242	241
	243	231,241,242
NVG	251	211
	252	231
	253	211,212,231,251,252
	254	211,212,231,251,252,253
	255	241,242
	256	231,241,242,243,252,253,255
	257	231,241,242,243,252,253,255,256
AG	280	
	281	201,280
	282	201,281
	283	201,281
CQ	292	
	293	
CQ	300	
	301	293
NVG	311	211,251
	312	211,212,251,252,253,311
	313	211,212,251,252,253,254,311,312
	314	254,255,256,257,311,312,313
AG	320	
	321	281,320
	322	281,282,321
EW	331	
DM	341	241,242,243,331
HIE	362	
TAC	371	211,212,231,241,242,243
	372	211,212,231,241,242,243,251,252,253,255,256,257,371
	374	211,212,231,241,242,243,371
	375	211,212,231,241,242,243,251,252,253,255,256,257,311,312, 314,371,372,374
EXT	391	241,242
	392	211

Figure 2-4.--Aerial Gunner/Observer Flight Update Chaining.

AERIAL GUNNER/OBSERVER FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
TAC	401	211,212,231,241,242,243,371,374
	402	211,212,231,241,242,243,251,252,253,255,256,257,311,312, 314,371,372,374,375,401
NBC	430	211
	431	213,251
DM	441	231
	442	231
MAT	451	211,213,251,311
HIE	461	

Figure 2-4.--Aerial Gunner/Observer Flight Update Chaining--Continued.